

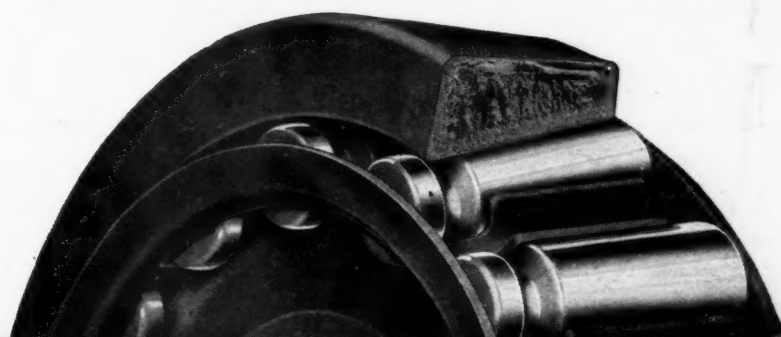
AUTOMOTIVE INDUSTRIES

The AUTOMOBILE

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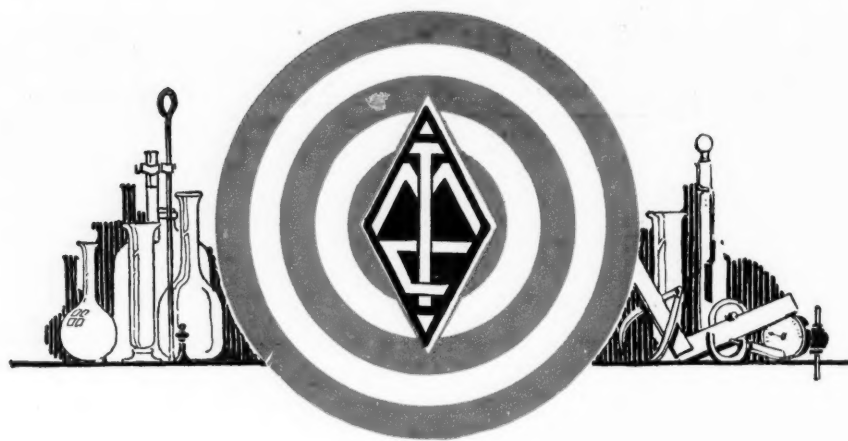
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NEW YORK—THURSDAY, JANUARY 12, 1922

No. 2

Price Reductions Feature New York Show Opening

Sales influence of price drops uncertain. New models numerous. Noticeable trend toward utility closed cars. Marked trends in chassis and engine design. Attendance compares favorably with last year.

NEW YORK CITY, Jan. 7—The twenty-second National Automobile Show, conducted by the National Automobile Chamber of Commerce, has opened its doors. A view of the crowds at the opening gives no indication of a business depression. The afternoon crowd on the opening day has not been quite so large as last year, but the evening has brought out as many as any previous year. The number of exhibitors is as large as usual. A spirit of optimism, tempered with a sane view of facts, is found at nearly every booth.

The great number of price reductions comprise the chief commercial feature of the show. It is difficult to determine at this time just what the sales effect of these latest reductions will be. This phase of the show is discussed more fully in later pages.

There was considerable color in many of the exhibits, although the brightness was conservative in most cases. There were only a few bizarre body colorings this year. A majority of the exhibits were so arranged as to emphasize the utility, rather than the luxury, phase of the automobile. Few ribbons over hoods acted as silent "hands off" signs. Curious customers were encouraged to look under the hood; sedan doors were cordially thrown open to those who appeared to be interested; there was a definite effort at selling that has not characterized shows of other years. There is still a noticeable lack of training on the part of salesmen, but the spirit behind the mer-

chandizing effort is much better than in previous years.

The increasing desire of the general public for facts and information concerning the working parts of the cars has been recognized in most exhibits. A factory man has been provided in most cases to explain the details of the car. The need for this sort of service is typified by an incident which occurred about the middle of the afternoon on the opening day. A local salesman at one first-floor booth came running back to the manager exclaiming, "For goodness sake, get somebody out here to talk the technical end of this car. These fellows are catching us up right and left." The requested service was provided immediately in this case, as in most others throughout the show.

There are certain interesting and definite trends in body designs. There is an atmosphere of increased utility and less display. A greater diversity of models and styles has been provided to better meet the diversity of industry and social needs. The entering wedge of the smaller closed type car is very apparent. No longer is cubical capacity a measure of the appreciation of the buyer. In sedans there is an unmistakable trend to the smaller sizes, and the greatly increased sale of some makes during the past year has perhaps served to draw the attention of other manufacturers to this demand. The big sedan and the big limousine seem to be on the wane. History repeats itself and if we take a leaf from carriage history we recall that the value of the fashionable brougham or

victoria was not measured by wheelbase, but rather by its effectiveness as a vehicle best suited to the needs of those who owned it.

The greater numbers of coupes are another evidence of this. Some of these have a commercial aspect which will make them well suited for use by professional and business men. Bringing the price of the closed type down so as to be closer to the open car is certain to stimulate the sale of the closed vehicle and manufacturers will have to arrange for increased production where they have some of these increasingly popular models. There has been a long and consistent request for a reduction in the price of closed types and the answer seems to be pretty nearly at hand.

A second unmistakable trend, and one which has scope for development, is improving the personal conveniences of the car, of which many examples are seen at the show. The American automobile has been described as the greatest utility automobile in the world, but it should also be the easiest and most convenient to operate. This year some manufacturers have confined most of their improvements to a better arrangement of the body for appearance and use. Some have consulted artists of note to assist in this work, and the more comfortable tilt to seat cushions, a general improvement in steering wheels, added style by individuality in lamp design, more comfortable springs, lighter operation for pedal controls, easier brake application, more convenient lighting control and many other details of this character reflect a commendable effort.

There is a very definite indication, on the engineering side, that manufacturers have attempted to give their dealers a better product to sell. While there are many cars which have changed but slightly from last year, there is an unusually large number which embody numerous refinements of chassis and engine design. There are several entirely new cars and several entirely new models of old cars.

The new Chandler, Velie and Elgin models were shown for the first time, while the Rickenbacker made its initial public bow as well. The Hanson light six, which will sell for less than \$1,000, is displayed. The hotel exhibits include the new Fox air-cooled car; a Frontenac engine and racing car exhibit; Gearless Motors steam car,

Bay State car, an assembled job; the Ace, the Neracar, an interesting new type motorcycle; the Driggs, and others. The new Gray car is, perhaps, the most important of the hotel exhibits from a possible quantity production standpoint. This is priced "under" \$500.

The recently announced Jewett is not in the show, but is being unveiled before a select group on Thursday evening.

The new Franklin four-cylinder air-cooled job is the most interesting show development in the way of a new model, but is not being exhibited publicly. It will sell for about \$1,000. This car is also to be unveiled before a select group later in the week. Experimental work on it has been completed, but the Franklin company is not yet ready to begin production. This new car is designed to make from 28 to 30 miles per gallon and will develop a speed of 60 m.p.h. The touring car price will be about \$1,000 and the sedan \$1,500. It will have a wheelbase of 103 in. and will generally follow the lines of the 6-cylinder Franklin. Improvements have been made in the induction jacket and the regular Franklin vaporizing system will be used. It will have semi-elliptic springs, front and rear. It is understood that John Wilkinson, the Franklin engineer, had this car well toward completion of design when the war changed all manufacturing plans. It is expected that a new factory will be erected for the production of this vehicle, although this will not be started immediately.

The verdict as regards the immediate merchandizing value of the show cannot yet be given, but there is every indication that a stabilization of prices on the basis of accurate cost and selling data will be necessary to the stimulation of sales in the immediate future.

The show does bring out these three points, however. First: automobile manufacturers as a whole have taken advantage of the period of depression to have their engineering departments design better cars; definite progress has been made along this line, although there is some ways to go yet. Second, the demand for a utility closed body, with a low price differential between it and the open job has been recognized and several attempts are being made to meet it. Third, lasting qualities and second-hand value are going to be more important factors in car selling than ever before.

Influence of Price Reductions at Show Uncertain

By David Beecroft

AN analysis of the public's attitude during the two opening days of the New York Show is that very many do not believe all prices to be at bottom, notwithstanding the fact that the show opening was heralded by a great number of price reductions.

It yet remains to be seen what will be the influence of the heavy advertising campaign that is being carried on in the metropolitan press to advise the public in large black figures what the new prices are, how all previous prices have been shattered, how the highest point in car values has been reached, etc. These messages of new prices and new models fill the pages of the press. The buyer cannot escape them.

The New York City buyer cannot be taken as a representative of the average buyer of the country, and the exact effect of price reductions from a national viewpoint has yet to be determined. There is a sentiment prevalent

that, among buyers having used cars to trade in, the price reductions are not stimulating purchases as might have been expected. Some of the prospects are reasoning this way: John Smith has a 1920 X car that he wants to trade for a 1922 X model. Two months ago he was offered \$1,000 for his old car in trade for the new, but Smith decided to wait until the show, strong in his belief that the 1922 X car would be reduced perhaps \$400 by show time. This reduction has been made, but now Smith has learned that the value of his own car has been reduced the same amount. He does not see himself any better off under the new prices. He is not much closer to buying to-day than two months ago. As one manufacturer expressed it, "The prospect with a used car to trade in is largely influenced by what he can get for his old car. That price means as much to him as the price of the new car, and he sees that if you cut \$400 off the price of the new car and take as

much off the estimated value of the old car he is no further ahead. He has to pay out the same amount of money, plus his old car, just as if he had purchased at the higher prices before the cut was made."

Estimates by dealers indicate that at least 50 per cent of the buyers with old cars to trade in are influenced primarily by what they get for their old car. It makes no difference to them whether the new car is priced at \$1,200 or \$1,500 if in either case they pay for it \$1,000 cash, plus their old car. The cash remains the same in either transaction.

The new prices have a different appeal for that small minority of the first-time buyers. This group, however, is a small minority. To them price reductions represent savings in dollars of the actual reduction. Price reductions stimulate them to purchase, and where they have confidence that prices are at the bottom they are certain to buy according to their needs, with due regard to the season.

There is a distinct increase, evidenced at the show, in that school of manufacturers who believe that the initial selling price of a car is not the dominant issue in a sale to-day, but rather that the second sales price, or what the owner can realize on his used car, is the more essential consideration in the selection of a new car. Transportation value is becoming more and more a cardinal, if not a primary, consideration. The present wide range of price reductions is impressing this fact on the buyer as never before. Every day during the last few weeks he has seen the value of his used car drop. He has counted his losses as he has been advised of them through the advertisements in the press. The present show, with its bumper crop of price reductions, is driving this thought home.

Is not this buyer concerning himself with this question, "What is going to be the value in eight months or one year of the car I am thinking of purchasing at this show—what can I sell it for then?"

The manufacturers have brought him to this turn of mind. The advertisements in the past twelve months of so-called final prices have created a feeling akin to uncertainty, which is perhaps resisting sales to-day. The all-too-general concentration of so many makers on prices is the apparent major reason for purchasing any particular make of car, and often prompts this question, "Are present prices the bottom, or is there to be another of these final reductions?"

Would not car-merit advertising talk, and making the price secondary to this merit argument, be more convincing to-day than staking so much on the price? The enthroning of the dollar mark as the panacea for selling ills is interpreted as a reflection of that still too prevalent bugbear of great production. The spectre of war-expanded factories, overhead difficult to reduce, and big production programs of past years, are perhaps hanging over too many manufacturers. These manufacturers see low prices as synonymous with big production. It might be better business to think lower production and better quality. The Armageddon of some manufacturers is still ahead. Some are resigned to be content with limited production and proportionate profits.

The condition of the times demands that the manufacturers should carefully weigh all selling factors and the remaining days of the show will undoubtedly serve to drive home this thought. The present thunderstorm of liquidation prices will pass, but time will be required for the public to crystallize its buying program.

Many New Cars at Show

By J. Edward Schipper

THERE is more novelty at this New York Show than in any other for five years. This does not mean in the way of novelty accessories and mechanical devices alone, but in new cars and in real engineering features which have been developed during the last few years and which are now finding their way to cars for the first time. In addition to refinements in the older models, there are several new cars which are making their debut at this show—more of these which are important, in fact, than for several years.

True, some of these cars have been on the market for a large part of the year which has intervened since the show of 1921. The Wills Sainte Claire is a newcomer during the year, but is already reckoned as a stable member of the industry, although exhibiting its product at a national show for the first time. The Rickenbacker is showing its first cars off the production line, although almost simultaneously with the opening of the show the factory in Detroit has reached a steady production, in the engine department at least, of ten per day. The Durant organization has its product at the show, this being another of the strongly recognized concerns practically born during the year and now submitting its product to the scrutiny of trade and public.

There are a great many cars at the hotels which may next year be seen on the floor of the Palace. The Gray, Jewett, Fox air-cooled, Ace, Bay State, Ogren, Frontenac, Ferris, Sun and others are to be found at the hotels.

Rivaling in interest the new cars are those which have so many changes that they may be properly classi-

fied as really new models for 1922. The Chandler, a new series car with a radically revised rear end, is of particular interest in that it marks the entry of this important concern into the ranks of those who are using Hotchkiss drive. Other refined models which are being shown for the first time are Studebaker, Case, Elgin, Velie, Oakland, Nash, Hanson, Premier, Lexington and Cleveland.

There are certain well-defined tendencies to be noted in the changes made in these cars which are of prime importance. One outstanding feature which is to be noted on more cars than any other during the year is the tendency toward the use of stiffer frames. The adding of frame cross members and in some cases the use of channel members of not only greater depth but of wider flange has been particularly widespread. Some cars have an entirely redesigned frame. One of these is the Jordan, which has greatly increased the strength of the structural members. Studebaker, Earl, Chandler and Mitchell are particularly good examples among the new models of the improvement made in this respect, though there are a number of others.

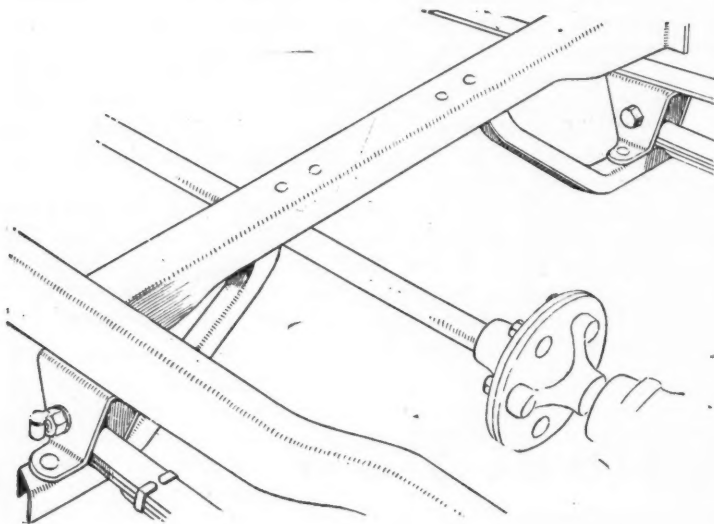
There are practically no examples of larger engines in the same chassis, which is distinctly different than a few years ago, when show-time was usually the occasion for the announcement of chassis containing power plants with "more power." The Earl car upon succeeding the Briscoe increased the engine dimensions slightly, but is one of the few exceptions in this respect. The care taken to make cars easier to drive, by means of

lighter clutch and brake pedal pressures and more accessible instruments, deserves mention.

Chandler Makes Changes

Extensive changes have been made in the Chandler chassis, resulting in a quieter car, of which longer life and more satisfactory performance may be expected. What has been accomplished is well brought out by the fact that, in revising the rear end drive and suspension, 42 lb. have been added to the frame and axle members for the sake of greater strength and rigidity, but through other refinements which have deducted considerable weight the chassis is but 2 lb. heavier than previously.

The changes are chiefly in the rear end of the chassis and are due to the adoption of Hotchkiss drive, stronger rear axle, heavier frame, hand brake on the rear of the transmission gearset and consequently an entirely new layout of brake actuating linkage. At the same time



Part of new Chandler chassis which now has Hotchkiss drive and an entirely revised rear end

there have been a few other changes at miscellaneous points throughout the entire car, although the power plant has been but little affected. The bodies are so extensively refined that they may be classed as entirely new.

In the adoption of Hotchkiss drive the torque member has been abandoned and longer semi-elliptic rear springs are now used. These are 58½ in. in place of 56 in. The spring width has also been increased ¼ in. and is now 2¼ in. The front rear spring hanger has been strongly reinforced to take the drive of the car, and there is now a bracketed cross member at this point to provide additional support and give a high factor of safety.

There is also another tubular cross member on the rear end of the frame which not only increases the rigidity of the frame but also acts as an additional support to the rear tire carrier brackets. The changes which have been made in the rear axle are claimed to have increased the strength of that unit by 27 per cent. The pinion and shaft are now a one-piece forging, eliminating the usual key, nut and cotter pin mounting. The pinion bearings are now Timken tapered roller in place of annular ball, and the mesh between the pinion and the ring gear is now adjustable from the exterior of the housing. The differential is now mounted on Timken bearings instead of ball. Annular ball bearings are now used in the rear wheels and in transmission bearings

and Timken bearings are continued in the front wheels.

New flexible couplings of the fabric type are employed instead of the metal universals formerly used. These are special Chandler design which, the experimental department states, they have had under observation on test cars for 18 months. The elimination of the metal universals is a point in line with the policy in redesigning the chassis of reducing the labor incidental to chassis lubrication. In the revised chassis there is but one grease cup and that is on the steering gear housing and, consequently, readily accessible upon lifting the hood.

The change in the engine consists solely in the remodeling of the fan drive. This has resulted in better alignment and the elimination of any tendency for the belt to jump the pulley at high speeds. The change is both one of design and of manufacture. The more accurate machining of the fan bracket is quite as essential in the satisfactory results which are now said to be obtained as the change in the design and material of the pulleys themselves.

Located in the transmission gearset housing, the speedometer drive gear is assured of lubrication and quietness. This is typical of other changes which have been made for the same purpose. A statement has been made that in the rear part of the chassis the new construction eliminates twelve points where backlash, due to wear, may occur and eventually develop rattle. Five of the points are in the propeller shaft and universals, one in the clutch and six in the torque members. The point mentioned in the clutch is due to the adoption of a steel center friction disk which insures longer service.

There is an anti-rattle and alignment feature in the rear brake construction consisting of a flat spring which passes through an eye on the brake band. This makes it certain that the band will always center itself on the drum and will also tend to eliminate sideslap in the band.

The bodies are entirely new and are of interest particularly because they are about the first production from the new \$10,000,000 Cleveland plant of the Fisher Body Co. There are eight cars in the line, including five-passenger touring, four-passenger dispatch, four-passenger roadster, two-passenger roadster, seven-passenger sedan, seven-passenger limousine, four-passenger coupe and seven-passenger touring.

There are some interesting features on the bodies which represent new departures, at least for stock bodies. The cowl ventilator is of the flush type and does not project above the cowl deck. In the floor board in front of the driver's seat there is a trapdoor which gives ready access to the battery.

Refinements in Nash

Refinements have been made throughout the Nash line, both the six- and four-cylinder models. A new line of bodies has been mounted on both. The six-cylinder power plant has not been altered fundamentally, but there have been a number of changes which affect the handling of the fuel and the auxiliary units, such as the fan and electrical equipment.

Delco three-unit electrical equipment takes the place of the system formerly employed. The generator drive pulley is now drop-forged and machined all over. The fan, which is on the front end of the generator shaft, is now a die casting, in place of the sand casting formerly employed, and more satisfactory performance and longer life is secured by putting the fan and generator in strict running balance in assembling the engine.

A change which has been made in the interest of service accessibility is the making of the crankshaft drive pulley in two parts, permitting of the replacement of the belt without taking off the radiator. The belt can now be

slipped off over the fan by disassembling the crankshaft sprocket and, in reassembling the belt, can be fitted over the fan and the other half of the crankshaft sprocket fitted into place.

A new hot air stove has been adopted. This has a venturi-shaped opening which points toward the rear. It has been adopted in view of a desire to reduce the amount of road dust which finds its way through the carburetor and into the combustion chamber. As the dust passes through the radiator the inertia of the larger particles will carry them past the venturi-shaped horn of the hot air stove so that in this way a part of the usual accumulation will be eliminated. It is also claimed that when the other particles strike the heated exhaust they will drop and consequently be eliminated from the incoming air stream. The carburetor air spring has now been inclosed to give it longer life.

There is a new oil filler on the engine and a plate on the cover over the valve mechanism which is inscribed with the firing order and with the clearances which should be left in the valve adjustment. It is possible to drain the crankcase now without getting beneath the car. There is an opening cut in the pan and a special tool provided with the car fits over the handle of the draincock and permits it to be turned from above.

A refinement has been made in the clutchshaft. This is still a splined type, but is now ground on all sides. The splines are now individually hand fitted, resulting in a claim for easier shifting and longer life. The propeller shaft, which is hollow, has now been provided with oil plugs at each end to permit of the lubrication of the universals from these points. An oil gun is provided in the tool kit to take care of this.

Heavier Front Axle

A heavier I-beam front axle has been adopted, and in mounting the oilers for the steering knuckle the lower oiler has been placed on a sort of standpipe which brings the level of the oil over the thrust bearing. Closer limits of manufacture have been adopted in certain parts of the rear axle to increase the quietness of this unit.

An entirely new spring suspension is a characteristic of the new model. The springs consist of an increased number of thinner leaves and a rebound plate. The theory of this type of springs is that when small bumps are encountered only the flexible ends of the spring are affected. When a larger depression is struck the entire spring is depressed and then the rebound plate comes into play. Its arc is opposite that of the other leaves, so that it has the action of softening the recoil. It is also claimed that this type of spring is instrumental in reducing side sway.

The changes on the Nash Four are very much along the lines of those made in the Six. The Delco three-unit system has been adopted, and the front axle, transmission gears and shafts, wheel and axle bearings are the same for the Four as for the Six. A new carburetor has, however, been adopted on this model; this is the double-adjustment Schebler which replaces the previous type Schebler. The bore of the Nash Four was altered during the year from $3\frac{1}{4}$ in. to $3\frac{3}{8}$ in. Another change in the Four has been the addition of a gusseted cross member to the frame to increase its stiffness.

The bodies and equipment on both Nash models have been improved materially. A gasoline gage has been placed on the dash of the Six. A new two-passenger inclosed body is now provided on the four-cylinder chassis. It has a permanent leather-covered top and is virtually an inclosed roadster. It has a large luggage compartment under the rear deck and there is a compartment also for small parcels at the back of the seat.

The New Jewett

The Jewett will be built and marketed by the Jewett Motors, subsidiary of the Paige-Detroit Motor Car Co., in the Paige shops. It will be sponsored by E. M. Jewett, president of the Paige organization, after whom it is named.

The new car is a Six with 112-in. wheelbase. It is equipped with a $3\frac{1}{4} \times 5$, L-head motor, with an S. A. E. rating of 25.35 hp., but actually claimed to develop 49 brake horsepower on the block. The motor will be built in the Paige power plant. It is a three-bearing crankshaft unit. Lubrication is by pressure to the main bearings and also by splash. Cooling is by centrifugal pump. The four-bladed fan is driven by a flat belt from the pumpshaft.

The clutch is a four-plate, dry construction, departing from usual practice by using six helical springs for compression set out toward the periphery of the clutch plates in place of one. These are claimed to give a more even clutch engagement, regardless of clutch alignment, and to eliminate the grab or chatter and also to make adjustment unnecessary.

A conventional type transmission is used with three forward speeds and reverse. A transmission lock built into the cover of the gearbox and controlled by a Yale cylinder positively locks the gearshift lever in neutral. A tubular driveshaft with two universals transmits power from the gearbox to the rear axle. An all-metal universal joint of very clean design is used. It consists of a hollow ring through which the torque is transmitted and which incloses all the working joints. This ring forms a container for the necessary lubricant, as well as a dust cover, making care of the joint, it is claimed, a simple matter of renewing the oil every 20,000 miles.

Final drive is through a Timken rear axle fitted with spiral bevel gears. The pinion is supported between two roller bearings, one on either side. Torque is absorbed through long, semi-elliptic rear springs.

The foot brake is of the conventional type, contracting around 12-in. steel drums bolted to the rear wheel hubs. The hand brake contracts around a 10-in. steel drum attached to the propeller shaft between the gearbox and the forward universal joint.

The chassis side members are channel sections tied together by four cross members. The two center cross members are channel sections riveted back to back and gusseted at the ends to resist diagonal stresses. The cross member at the rear forms a shield, protecting the 17-gal. fuel tank.

Studebaker Changes

Studebaker is showing refined models with both chassis and body changes. None of the principal chassis dimensions have been altered, but in the two larger models a rather radical change has been made in the incorporation of the disk in place of the cone type of clutch. This has been adopted not because the former clutch proved unsatisfactory as a clutch, but to facilitate gear changing. The stiffness of the frame has been increased on both the larger models, the Special Six and Big Six, and the bodies have been entirely redesigned, although along very similar lines to those of last year.

The Big Six is now fitted with a newly designed seven-passenger touring body with a heavy beaded edge and a larger and higher hood. There is also a new one-piece windshield, permitting greater vision; a windshield wiper fitted as standard equipment and cowl parking lights, which are miniature headlights in the corners of the windshield. There is now also a cowl ventilator, operating from the dash, and a courtesy light on the

driver's left. The tool kit has now been placed in a pocket on the left side of the driver and is locked with the same key that fits the transmission lock and ignition switch. The instruments have been rearranged on the dash and grouped to give better visibility.

About the same changes have been incorporated on the Special Six as on the Big Six, including the disk clutch, cowl ventilator, new windshield, etc. The Little Six, which is the newest of the three models, has been provided with a cowl ventilator and the windshield wiper, although the chassis and body have not been otherwise altered in any material detail.

Oakland Models New

Five Oakland models are shown for the first time. The engines have been improved in detail. Improved pistons and piston rings have been added and the cylinders are specially honed to insure a more perfect individual fit. A Morse silent chain drive has been made a standard at the front of the motor.

Distinctly new body lines are used, including a higher radiator, hood and cowl. Drum-type, non-glare headlights with exterior means for focusing are now standard. Nickel-plating is used on the radiator and other parts of the car where it will add most to the appearance. Rear windows and windshields are of plate glass, and in the closed models there is plate glass throughout. Heater, rear view mirror, visor, windshield wiper and snubbers are furnished in coupe and sedan.

All doors are now full square, with wide openings and handles inside and out. Locks are provided on all door handles in closed models. The door frames are metal covered to insure smoothness, and all hinges are concealed. The instrument boards are now walnut, with the instruments all faced with silver and all under glass. A new and convenient grouping is made this year. Corrugated walnut steering wheels are standard, with walnut spider in the closed models and polished aluminum spider in the open types. Another innovation in Oakland equipment on the 6-44 is that 32 x 4-in. non-skid cord tires are furnished all around.

Goodspeed

The Goodspeed is a car designed along sport lines and is replete with refinements. It is named after its designer, who was formerly associated with the Roma company and who recently established several world's records for stock cars at Daytona, Fla. It is mounted on 124-in. wheelbase.

The engine is unusual in that it employs piston valves, producing a silent running mechanism, free from the clatter often resulting from the use of poppet valves and strong valve springs. The valves occupy about the same relative position as those in a T-head engine and are actuated by eccentrics. Large water spaces around the valves insure good cooling, and the cylinder head is so designed that it makes a good foundry and production job. Lubrication is by pressure and splash, the latter being used also for the valves. There are two spark plugs per cylinder, ignition being of the dual type. The engine is of the four-cylinder type, $3\frac{5}{8}$ x $5\frac{1}{8}$ -in. bore and stroke.

Other units comprise a Munsey clutch, Brown-Lipe gearset, fabric universal joints and Columbia rear axle. The front axle is an American ball bearing. Tires are 32 x $4\frac{1}{2}$ in., with wire wheels as stock equipment. The radiator is protected from strains by mounting it on two ball joints instead of on the frame side members or front cross member. A feature in connection with the frame is the incorporation on the front and rear horns integral brackets for mounting bumpers. This makes a

very rigid construction and eliminates the loosening of bumpers, quite common with conventional installation types.

Elgin

The Elgin 700 is one of the entirely new chassis models at the show. The engine has been made considerably more powerful, the increase in brake horsepower being raised from 37 to 46. The improved layout of the frame presents some striking characteristics, the most noticeable of which is the heavy box structure and the layout of the torque arm, which has its forward support on the engine base, and the abandonment of the cantilever spring in favor of the cross type.

The engine bore and stroke are the same as in previous Elgin models, being $3\frac{1}{8}$ by $4\frac{1}{4}$. The valve-in-head design has been retained, but the lubrication system has been entirely redesigned, embodying circulating pressure feed. The oil enters the hollow crankshaft at the rear end and is carried direct to the bearing. The oil pressure is regulated and controlled by the vacuum in the intake. Oil is also forced by pressure to the hollow rocker arm shafts, through the drilled rocker arms and over to small cups on the upper end of the pushrod.

The valve guides have been redesigned so that they can be easily removed and replaced in case of wear. The entire valve operating mechanism is then closed, using a top cover and side cover plates of aluminum.

The cooling system, which is of the thermo-syphon type, has been improved in several respects. The water jacket around the cylinders has been greatly enlarged, as have also the water inlet and water outlet passages. The radiator is considerably larger and the cooling fan has been improved. This is driven by V-belt and has a plain bearing, instead of a cup and cone as in the old model. The fan hub is a hollow casting which is filled with oil that floods the bearing.

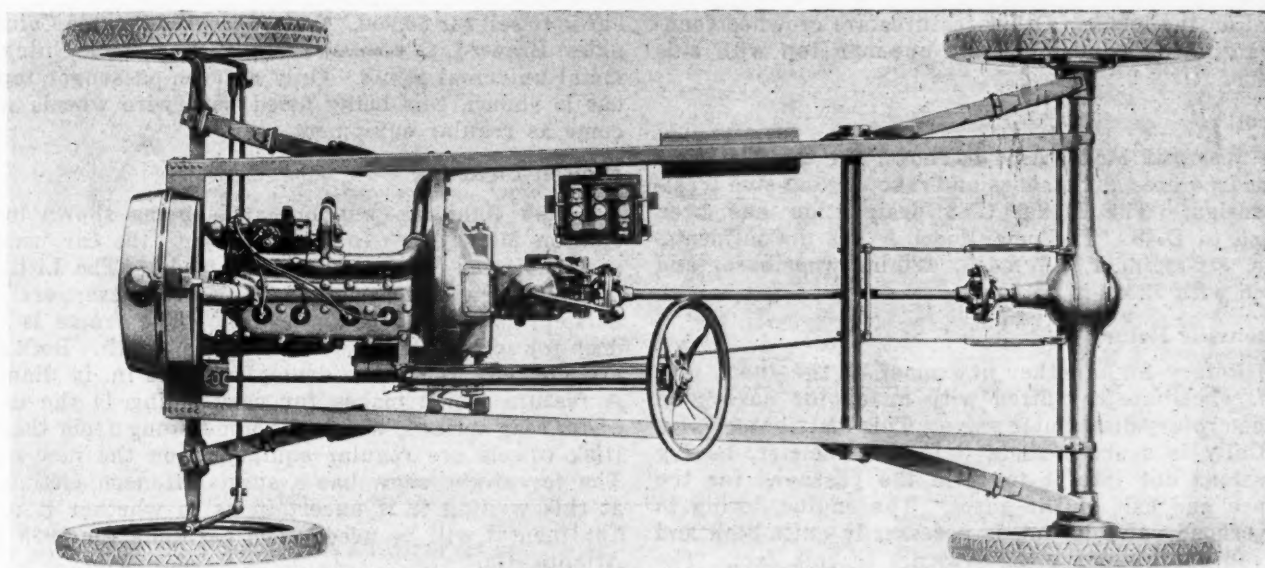
Fox

An air-cooled engine of interesting design is the feature of the exhibit of the Fox Motor Co. at the Commodore. The display consists of a chassis, a touring car and a sedan. The touring car is priced at \$3,900 and the sedan at \$4,900. The coach work is good and the general appearance of the cars, from the standpoint of body-work, is pleasing.

The pressure system of cooling is used. The cooling fan is mounted on the forward end of the crankshaft. It draws in air through a dummy radiator and forces it under pressure up the front of the engine through a duct which carries it over the cylinder heads. It then passes down past the cylinder walls which are provided with vertical cooling fins. These fins are integral with the cylinder walls.

The engine has six individually cast cylinders, with $3\frac{1}{4}$ -in. bore and 5-in. stroke. The valves are located in the head and are actuated by push rods and rocker arms. The clutch is a Borg & Beck, single dry plate and the gearset, which is provided with a lock, furnishes three speeds. Ignition is by Bosch magneto and the starting-lighting system comprises Westinghouse generator and motor and Exide battery. The carbureter is a Zenith and is fed by a Stewart vacuum system.

The axles are of Fox design. Semi-elliptic springs are used front and rear. The service brake operates on the transmission and the emergency internally on drums on the rear wheels. The steering gear is a Ross and the wheel equipment is optional. The tires are 32 x $4\frac{1}{2}$ cord and the wheelbase 132 in. Equipment includes Moto-Meter, Watson stabilizers, power tire pump, rear view mirror and windshield cleaner.



Selling for less than \$500 the Gray chassis which is on exhibition at the Commodore hotel, presents a study in design primarily arranged for manufacture on a quantity basis

Durant Six

Durant is showing its new six-cylinder chassis. This has been completely designed from the old Sheridan car. It incorporates the Ansted engine, which is a $3\frac{1}{2} \times 4\frac{1}{2}$ -in. unit, said to develop 70 brake horsepower at 3000 r.p.m. The engine is provided with Auto-Lite electrical system, Rayfield carburetor and Stewart vacuum system. Other units include a dry disk clutch and Timken axles and $32 \times 4\frac{1}{2}$ -in. Fisk cord tires are used. There are some notable accessibility features on the car, particularly in the brake adjustments.

Case Model X

The Case Model X is one of the new chassis. It has a Continental model 7-R engine. The previous Case model used a Continental 9-M. The new model is a six-cylinder of $3\frac{1}{4}$ -in. bore by $4\frac{1}{2}$ -in. stroke. The Model 7-R is a high-speed engine and at 2600 r.p.m. develops 55 hp. The new car has a wheelbase of 102 in., as compared with 126 in. for the last year's model, and with open touring body weighs 3050 lb. The chassis is also furnished with a sedan body and then weighs 3350 lb.

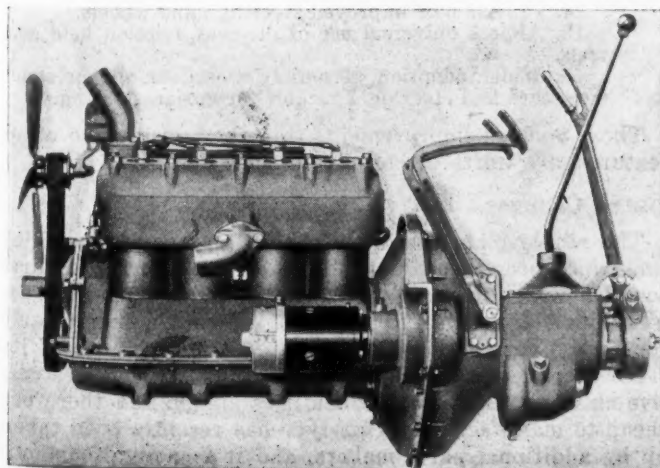
Last year's model was equipped with a clutch and gearset made by parts makers, but these parts in the present model are made in the Case factory. Clutch is the multiple dry disk type, similar to that used on earlier Case cars.

Gray

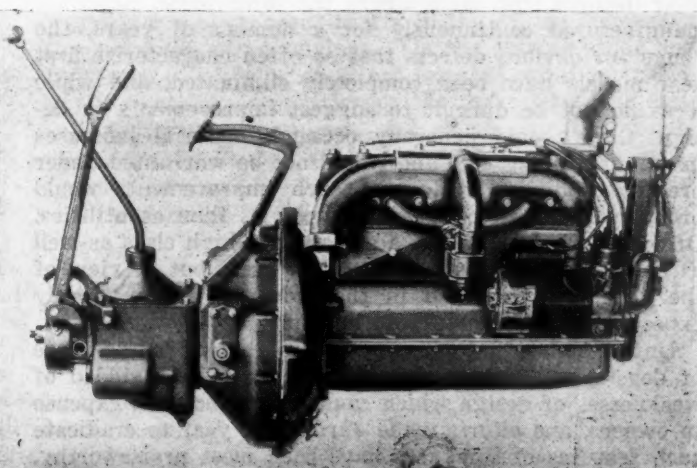
The new Gray is priced under \$500. It is the product of the Gray Motor Corp. of Detroit, of which Frank L. Klingensmith, formerly of the Ford Motor Co., is president. It is powered by a four-cylinder, $3\frac{5}{8} \times 4$ -in., L-head engine. The exhaust and intake manifolds are located on the right side of the engine, as are the combined generator and ignition unit. The starting motor is located on the left side. Lubrication is by splash. Gasoline is supplied by gravity from the main tank, which is located under the cowl. Cooling is by thermo-syphon.

The clutch and gearset are a unit with the engine. The former is of the single-disk type and the latter provides three speeds forward. The rear axle is a semi-floating Timken with spiral gears. The drive pinion is integral with the driveshaft. The service brake is of the internal type on the rear wheels and the emergency operates on the transmission. The springs are quarter elliptic front and double quarter elliptic rear. The tires are $30 \times 3\frac{1}{2}$ in. on demountable rims. The steering gear is of the spur gear type with 16-in. wheel. The controls consist of gas and spark levers on the wheel and foot accelerator pedal. The wheelbase is 100 in.

Standard equipment includes electric horn, tools and spare rim mounted at the rear. The cushions are 5 in. deep and the doors 21 in. wide. The door handles are



Mounting of starting motor on the new Gray four-cylinder engine



Intake side of new Gray engine showing the hot-spot manifold

located on the inside. Other features are crowned fenders, ventilating windshield and one-man top with side curtains.

Westcott

The Westcott Model A-44 is shown for the first time and incorporates a transmission brake of exclusive Westcott design. The Model C-48 designation has been changed to D-48. The new Model A has a Continental engine, six-cylinder, $3\frac{1}{4} \times 4\frac{1}{2}$, 120-in. wheelbase, and is fitted with 32 x 4-in. tires.

Bournonville Rotary Six

The Rotary Six, another newcomer at the show, is a 130-in. wheelbase car fitted with an engine having an overhead rotary distributor valve. This distributor valve essentially is a shaft about 3 in. in diameter, having depressions cut into it to form the passages for the entrance and exit of the gases. The engine, owing to the overhead valve layout, is necessarily quite high and the hood on this car gives evidence of this fact. The

car is to sell for \$6,000. Other features include Columbia axles, Brown-Lipe transmission, Borg & Beck clutch and metal universal joints. Only a seven-passenger touring car is shown, this being fitted with wire wheels which come as regular equipment.

Hanson Light Six

A new light six-cylinder car is being shown by the Hanson Motor Co. In many respects the car uses the same units as the larger Hanson model. The Little Six is a 112-in. wheelbase job, seating five passengers. Upholstery is of long grain leather. The frame is quite deep for so small a car, having a 6-in. depth. Both axles are Timkens, the brake drums being 14 in. in diameter. A feature which makes for easy riding is the use of 54-in. rear springs, which are underslung from the axle. Disk wheels are regular equipment on the new model. The car at the show has a special Hansen engine, but at this writing it is uncertain as to whether it or the Continental will be used. The car sells for \$995 f.o.b. Atlanta, Ga.

Trends in Chassis Design at the New York Show

By P. M. Heldt

AN impression of substantial and healthy progress in design is carried away from the show after an inspection of details of transmission, running gear and controls. Naturally, the improvements are very unevenly distributed; that is to say, there is a very considerable number of cars at the show that are exactly the same in all important particulars as they were last year, while others are materially, if not radically, changed. Moreover, there are a goodly number of entirely new models and some new makes on view. On the whole the most progress in design seems to have been made where it was most needed, which is a matter for satisfaction.

In judging the trend of design one must not lose sight of the economic conditions which have prevailed during the past year. We have passed through a period of deflation, and what demand for cars we have had has been mainly for vehicles of greater utility at decreased cost. The price trend has been constantly downward. In view of these conditions it is easy to realize that many of the well established firms have found it inexpedient to change their designs. In cases where the same model has been manufactured continuously for a number of years, the "bugs" or obvious defects that so often characterize first year models have been completely eliminated, and while it would not be difficult to suggest improvements in design, these would generally occasion material increases in manufacturing cost and would not be warranted under present conditions. Most of such improvements would probably be better classified as luxuries than as utilities. Of course, there is to-day a demand for high class as well as cheap cars, as there always has been, but in view of the general price trend in the industry we can hardly expect features of luxury to multiply just now.

Unfortunately not all cars are in that advanced state of development where they have been entirely ridded of weaknesses of design which cause annoyance and expense to owners, and efforts made during the year to eradicate such features of weakness have been most praiseworthy.

Following is a synopsis of the outstanding trends in chassis design as revealed by an inspection on the open-

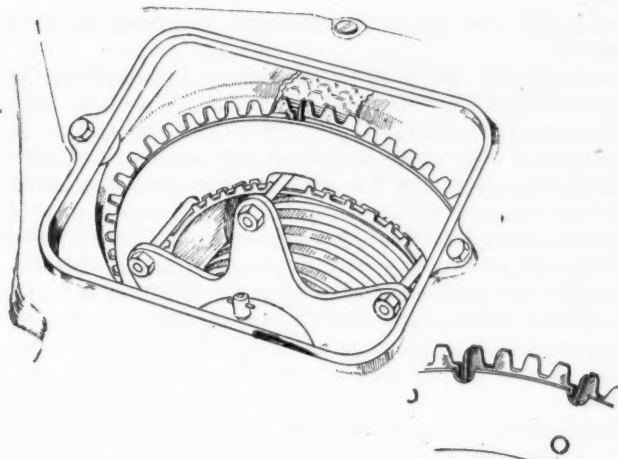
ing day of cars at the show proper and in the various hotel exhibits:

1. Increased use of the single plate, multiplying lever type of clutch, particularly on low priced cars.
2. Widespread adoption of involute keyed or "gear-toothed" spiders and drums for multiple disk clutches.
3. Endeavors to overcome chattering or noise and a tendency to failure to disengage in such clutches.
4. Increased use of transmission locks.
5. Provisions for making gear cases oil-tight.
6. Relocation of gear cases or redesign of shifting levers for more comfortable operation.
7. Further increase in the use of fabric universal joints.
8. Oil lubrication for metal universal joints.
9. Increased use of transmission brakes, particularly on low-priced cars.
10. Almost complete disappearance of the straight bevel gear drive.
11. Cleaning up of chassis layout by placing brake rods inside frame.
12. Strengthening of frames by use of heavier stock or deeper sections, or by the provision of additional cross members, particularly tubular members.
13. Almost complete elimination of grease cups.
14. Provision of improved steering hand wheels.
15. Almost universal use of die-cast, friction held controls.
16. Wider adoption of anti-friction bearings in steering gears and steering knuckles for easier steering.

These various improvements, together with some other features, are worth discussing in some detail.

Clutch Changes

The single plate clutch with multiplying levers, which came into prominence some four or five years ago, first found a wider field of application in the commercial vehicle line. It is an excellent type of clutch, particularly for use on cars of low or moderate power, because of its small inertia, permitting gear changing without destructive clashing, and also because it is simple and therefore cheap to manufacture. This type has recently been taken up by additional parts makers, and it is now also manufactured by car makers for their own use. An improvement recently introduced in one design consists in means



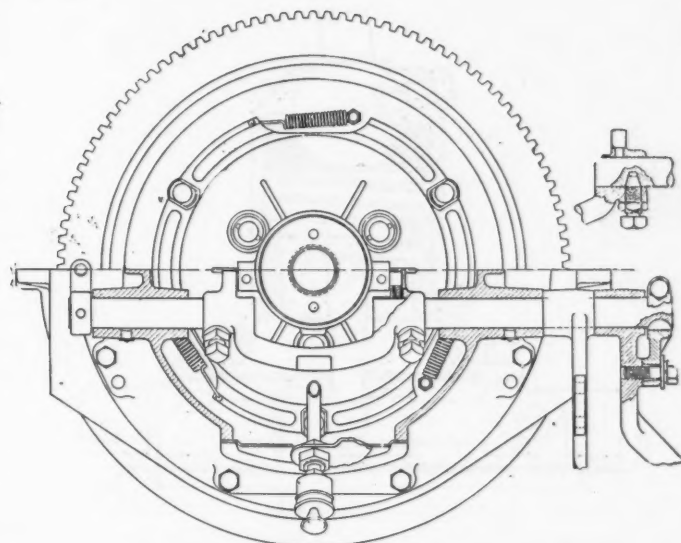
Split gear-tooth used on Lincoln cars to prevent rattle when clutch is disengaged

for equalizing the pressure on all three levers. With the ordinary arrangement, where these levers must be separately adjusted, one can by no means be sure that the pressure of all levers is alike.

For the large cars the multiple dry disk type of clutch is in most extensive use. In the earlier designs of this type, and in some present ones, the disks are driven by a relatively small number of keys or studs, and this often causes trouble on account of rapid wear of the key slots or holes in the disks. To overcome this, the practice of cutting keyways in the form of involute gear tooth spaces all around the circumference of the clutch disks (outer circumference of driving, inner of the driven disks) and providing the flywheel drum and clutch spider with corresponding keys or teeth, has gained vogue. This obviates the trouble from rapid wear, but it introduces another difficulty. The involute splines must be given a certain degree of freedom or else the clutch will not release properly when the pedal is depressed, but will drag. If the splines are made sufficiently free so the disks will separate readily when the spring pressure is removed, the disks are apt to chatter or cause an unpleasant noise. During the past year a number of manufacturers have set themselves the task of eliminating this chatter, and the results of their efforts may be seen at the show.

In the Lincoln clutch three or four teeth of one disk are saw-slotted and the teeth are then slightly spread so they fit in their tooth spaces with a slight pressure (see sketch). This is said to completely overcome the disagreeable chattering action.

In the Detlaff clutch used on the Dort car, as shown by the sectional views herewith, coiled tension springs are



New Detlaff clutch used on Dort cars has springs to prevent rattle on disengagement

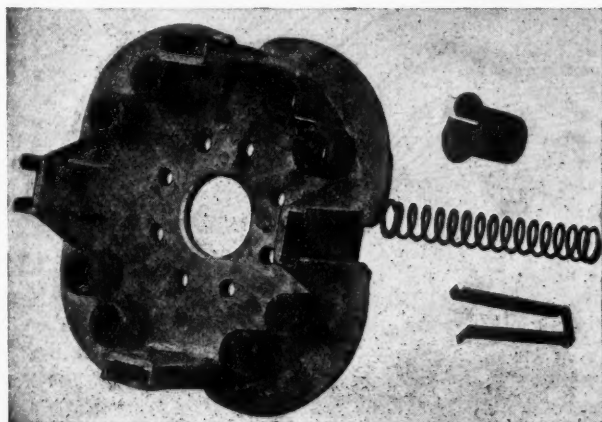
used to prevent rattling of the plates when the clutch is disengaged. The driving disks are provided with three cut-outs in their periphery in which these springs are located. One end of the spring hooks over a post secured into the web of the flywheel, while the other end engages into a hole in the disk near the circumference thereof. The effect of the springs is to constantly pull the disks sideways against the driving studs.

Improvements with substantially the same object in view were made in the Hudson clutch, which is of the cork insert multiple disk type. In this the cork inserts were formerly carried in the driven disks, and as the disks containing the corks must be made of considerable thickness, these were the heavier of the two sets of disks. Recognizing the fact that the driven member of a clutch should be the lighter one if at all possible, in order to reduce the clashing effect in gear shifting to a minimum, the Hudson engineers made the driving disks of heavier material and put the cork inserts in them, making the driven disks in the form of thin steel plates. The drum or spider of this clutch is now made in the form of a die casting, which offers advantages from the production point of view, but as materials suitable for die casting are never very hard, and therefore do not possess good wearing qualities under heavy pressures, it was necessary to provide wearing surfaces of other material in the form of inserts of strip steel on which the keys of the disks bear. The driven member is formed with four T slots like a planer bed into which these inserts snap. There are also eight thimble-shaped inserts in the driven member which receive the clutch springs. On the driving studs between lugs on the driving disks are inserted coiled springs which effect positive separation of the disks when the clutch is disengaged. There are also shear springs which coil around the driving studs once and whose ends hook over the edges of the driving plates, which tend to prevent rattle of the plates when the clutch is disengaged.

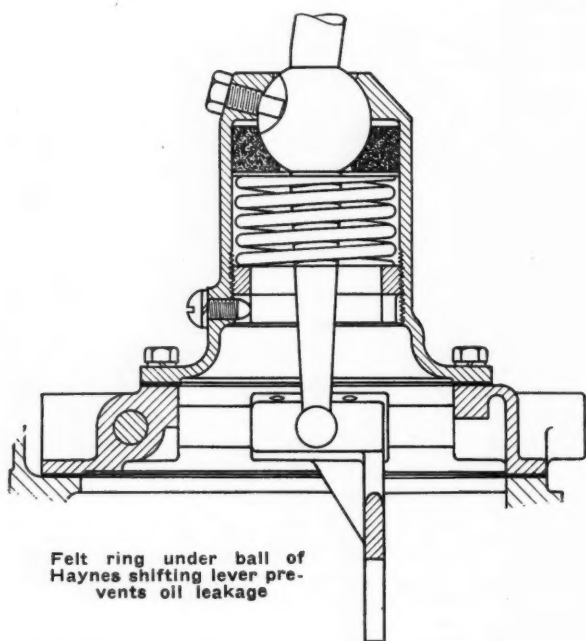
Transmission Locks

Locks on the transmission cover, of which there were only two examples two years ago, are now seen on a great many cars. Of course, the great number of car thefts during the past few years has brought the subject of theft retardants prominently to the fore, and there is no doubt that a substantial, non-pickable lock by which the gear shift lever can be locked in neutral has considerable merit.

There seems to be a tendency toward the increased use



Diecast clutch spider with hardened steel inserts, used on Hudson cars



Felt ring under ball of Haynes shifting lever prevents oil leakage

of oil lubrication for transmissions. Oil lubrication, however, calls for oil-tight gear cases. Even with grease lubrication a fairly tight case is an advantage, because in extreme summer heat or when the car is being driven on one of the lower gears for long periods of time, the grease becomes quite fluid and the pressure of the heated air in the case then tends to force it out through any openings there may be. The easiest exit is usually through the shifter rod guides, if these are not provided with covers or thimbles, as they often are in the more expensive cars.

Convenience in Gear Shifting

Those whose memory goes back to the time when center control first came into use will remember that in the early applications the control levers were often in very awkward positions; sometimes part of the seat was even cut away to give free range to the gear shifting lever. Even in present models gear shifting is by no means uniformly convenient, the gear shifting levers being sometimes of unsuitable design and in other cases located in positions where they are hard to reach from the driver's seat, at least in some of the gear positions. In talking with exhibitors, several mentioned having redesigned their shifting levers and in at least one case the gearcase was moved in order to bring the shifting lever, which is located on the cover thereof, into a more convenient position for the driver.

Directly back of the transmission comes the transmission brake, if one is used, and any visitor to the show can readily convince himself of the fact that the transmission brake is gaining in favor with American designers. In Europe transmission brakes are almost universal, while in this country they were a rarity ten years ago. The reason for the prevalence of the practice here of fitting both brakes to the rear wheels is believed to be as follows: About 1904 the Packard Motor Car Co. came out with its *Voiture Legere*, the racing counterpart of which was known as the *Gray Wolf*. This car marked a big step in advance in American design and became more or less of a model after which engineers patterned their designs. This early Packard had its transmission on the rear axle, a construction with which it is obviously impossible to use a transmission brake, as the brake would be ineffective if the gear were disengaged. Evidently some of those who accepted the Packard as a model failed to realize that the double brake on the rear wheels was a feature to which there was no alternative in that car, and

adopted it for cars in which there was no need for this construction.

Among present users of transmission brakes may be mentioned Franklin, Cleveland, Chandler, Westcott, Liberty, Holmes, Earl, Nash, Elgin, Ford, Fox and Gray. It will be noticed that quite a few of the lower-priced cars embody this feature, and the consideration that one brake close to the control device (thus requiring short, simple connections, costs less than two brakes on the rear wheels with long rods and more complicated connections and possibly equalizing gear) may have been determining in some cases. This remark is not made in any carping spirit, because as long as equally good service is derived, the simpler and cheaper the means of attaining the desired end the better.

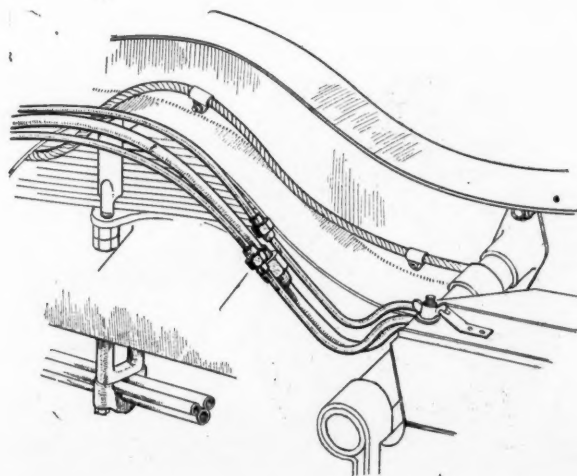
Unfortunately, as compared with the substantial transmission brakes found on most European cars of the better makes, sometimes fully inclosed, some of the transmission brakes on American cars are of rather flimsy appearance. With the limited diameter of the brake drum for the transmission brake, it must be made comparatively wide to get enough surface, and this calls for a considerable overhang of the brake support and the support for the operating lever. These supports must therefore be made exceptionally rigid to stand up to their work. A good design in this respect may be seen on the Fox car.

Further gains are shown by the fabric type of universal joint, and it would now seem that the only thing that could possibly stop its continued conquest of the field would be the popularization of the third member type of rear axle, that is, an axle having a propeller shaft housing built integral with it. With this type of axle a spherical joint is generally used at the forward end, and the dimensions of this ball joint are insufficient to take a fabric type of universal.

Recently several manufacturers of metal universal joints have brought out joints designed for oil lubrication, and these are now beginning to make their appearance on cars. In one car at the show the hollow propeller shaft serves as an oil reservoir for lubricating the universal joints.

This year the low-priced contingent at the show, including Chevrolet, Oakland and Dort, has given up the final drive by straight bevel gears, and, making an exception of the Ford, which is not at the show, the spiral bevel gear now reigns supreme and undisputed in the passenger car field.

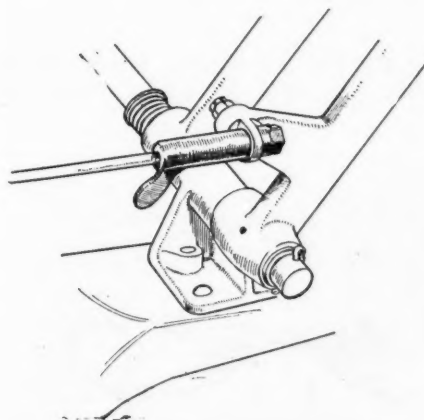
There are a good many cars at the show in which the frames have been made more rigid during the past year. In some cases the side bars are actually stronger than in



Fuel pipes on Locomobile are supported under chassis frame by special brackets and are easily removed

the preceding models, being either made of heavier stock of sheet steel or else having a deeper section or wider flanges. But in the majority of cases one or more cross members are added or existing cross members are made of deeper or stronger section. Tubular cross members at the front or rear or both are constantly gaining in favor. Such members are particularly serviceable in preventing weaving of the frame. A good example of the use of a tubular cross member is found in the new Gray low-priced car which has only a single cross member to the frame back of the engine; that cross member is a tube of considerable diameter and heavy wall thickness. Among makes of cars with stiffened or heavier frames may be mentioned Nash, Studebaker, Auburn, Lexington, Cole, Stearns, Liberty, Westcott and Gardner. On the Stearns a very deep central cross member has been substituted for one of less strength in the vertical plane. This cross member has a large opening stamped in it through which pass the propeller shaft and torque arm. The object of this cross member is not only to add to the rigidity of the frame but also to serve as a guard for the propeller shaft and torque arm, preventing these from falling to the ground and causing a serious accident in case they should become disconnected at the forward end. On the Chandler a simple brace for the spring bracket at the forward end of the rear spring was observed. The spring bracket is in the form of a U directly below the frame channel, as shown in the sketch, and a diagonal brace from a cross member runs to the bottom of the bracket.

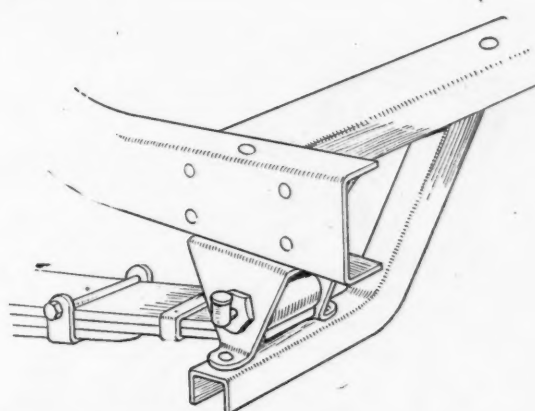
Aside from the tendency to increased use of transmission brakes there does not appear to be much new in brake design. On the Templar a ring is swaged to the edge of the brake drum on the outside to reinforce it. On several models the brake rods have been removed from the outside of the frame and put inside where they are less conspicuous when the car is assembled. Laudable attention has been given to the problem of making the adjustment of the brake easier. The Gemmer device, brought out about a year ago, by which the brake rods can be taken up without taking the pin out of a yoke connector, was seen on two or three cars at the show, and a similar device is found on the new Durant car. The Durant brake rod adjuster is shown herewith. An internally threaded sleeve is screwed over the end of the brake rod. This sleeve is reduced in diameter over part of its length and the reduced portion passes through the eye of an eye bolt



Brake adjusting device used on the Durant

whose shank passes through a hole in an arm on the brake pedal. An annular washer and a ring nut hold the sleeve in the eye of the eye bolt.

In connection with brake design it has been a wonder to the writer that apparently more makers than formerly put out their cars without brake equalizers. His own experience is that this is a serious defect, as it is quite impossible to so adjust brake rods that the two brakes



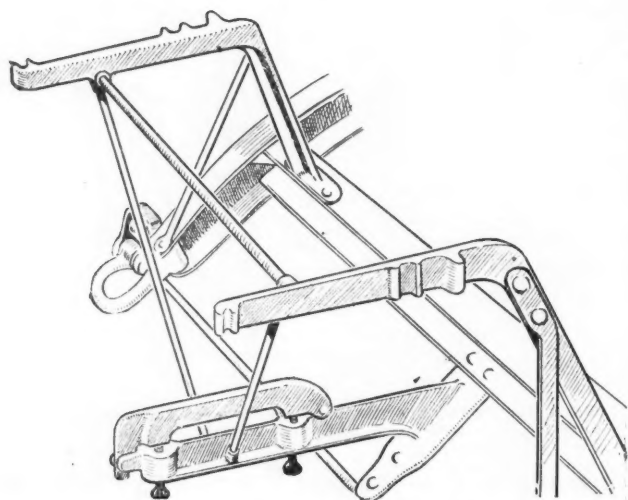
Brace for spring bracket used on forward end of rear spring on Chandler chassis

will grip equally if no equalizer is provided. Usually the brake on one wheel will exert much more retarding effect, with the result that that wheel will slip on the slightest provocation and its tire will show rapid wear. An acquaintance spoken to at the show, who is also "blessed" with a car without brake equalizers fully confirmed these observations. It may be that designers reason that the brake linkage is hidden on the car and the average purchaser never asks about it, so why assume this additional expense? It is safe to say, however, that users who have once been annoyed by seeing one of their rear tires wear out in short order, because of constant slipping under brake action, will look out for this matter when in the market for a new car. Of course, it is conceivable that in certain brake linkages incorporating rather flexible cross shafts, the brakes could be applied with nearly equal pressure even though they were not adjusted absolutely equally, but such flexible linkages are objectionable for another reason, in that they give the driver a feeling of insecurity. In the writer's opinion there are few parts that are not absolutely essential to the operation of a car that warrant so well the expense of their installation as does a simple effective rattle proof brake equalizer. Oakland has adopted brake equalizers this year.

Steering Wheel Changes

Coming now to steering gear, it is of interest to observe that a good many manufacturers during the past year have changed their steering wheels. Some that were formerly 17 in. in diameter have been increased to 18 in. (Gardner, for instance); others have changed to the composition, non-wearing rim with scallops on both the inside and the outside; still others use walnut rims with walnut spokes extending in either all the way to the metal hub or to metal spokes extending a short distance from the hub, and the Gardner has adopted an aluminum steering wheel spider instead of a malleable iron one. The new Standard car is an example of the use of a walnut rim and walnut spokes in the steering wheel, and the same car also has a walnut instrument board.

In several instances ball thrust bearings have been put into steering gears where plain thrust washers were formerly used, and the Studebaker among others is now fitting roller bearings on its steering knuckle pins, the object of both of these improvements being to render the car easier to steer. Looking over the steering gears and their connections, the writer was somewhat surprised at the crooks in some of the drag links. The reason why these links are given these awkward shapes is fairly obvious; it is desired to make the turning radius as short as possible, and to prevent limitation of the steering deflection by the drag link it is bent to such form that it is out of the way of the wheel when the latter is swung



New tire carrier used on Dorris cars

around till it is practically up to the frame. Bending the drag links to the extent seen on some cars greatly weakens them. It might be argued that the links in any case are strong enough for their work, and while this may be so, the fact remains that if they were made straight the same strength could be obtained with much less weight. There are many cars on which the links are absolutely straight, while in others there is only a slight offset. In the Studebaker, in which the frame tapers from end to end, the front springs are arranged parallel with the axis of the car, so that their rear ends are inside the frame, which seems to obviate the need of greatly bending the drag link in order to obtain a large limiting steering angle. Drag links with such crooks in them that they look as though they had been in a wreck do not appeal to the mechanical sense.

Frames tapering from end to end, with their side rails absolutely straight, have become very common. In a few instances either the rear end as far forward as the rear

springs extend, is made parallel with the axis of the car, and in some cases the front end is also parallel with the frame axis. But the bottle-necked type of frame has passed definitely out of use.

Grease cups in chassis lubrication have come to be a rarity. Numerous makers again have adopted the high pressure grease gun method of lubrication, while others have adopted the method of lubrication by oil fed in the same way as the ordinary oilers.

The Dorris car is provided with a new tire carrier which holds two tires and rims securely locked in position as shown in the accompanying sketch.

A good deal of interest centers in the Gray car exhibited at the Commodore, which is to sell at less than \$500, according to announcement. Among the officials of the company which plans to put this car on the market is Klingensmith, formerly executive vice-president of the Ford Motor Co. It is significant that while other former lieutenants of Henry Ford who dissociated themselves from the Ford enterprises and started out "on their own hook," like the Dodges and Harold Wills, carefully avoided the field in which direct Ford competition might be expected, Klingensmith is preparing to put out a car that seems to have exactly the same range of appeal as the Ford. To engineers the design of the new Gray is of much interest as indicative of what a car of cheap production possibilities should be. It has a frame with only a single cross member back of the unit power plant, and that tubular. The rear axle is of the pressed steel type with spiral bevel gear drive. In connection with this feature it would appear that the spiral bevel gear is as cheap as the straight bevel gear, or at least very nearly so, if you do not have to scrap an expensive installation for cutting straight bevel gears. The springs are quarter elliptic, those in the rear being double, superposed. The steering gear seems to comprise a double set of spur gears or what is known as a compound gear, at the bottom of the steering post, and from it connection is made to the steering knuckle on the opposite (right hand) side. Both axles are of Timken make. The wheelbase is 100 in. and the wheels are 30 x 3½ in.

Powerplant Trends as Seen at the Show

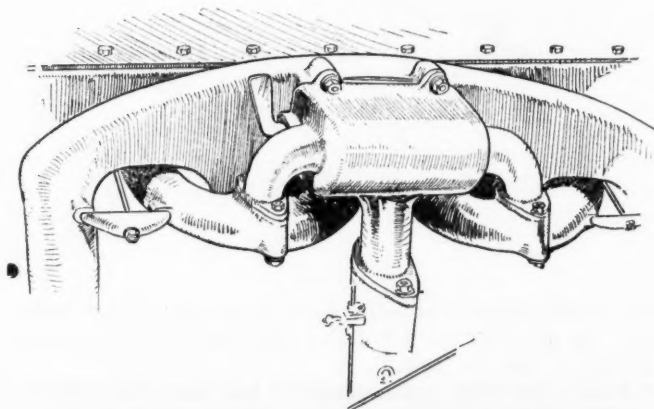
By Herbert Chase

THOSE who were looking for radical departures in means for better handling of fuels were able to discover but little of this nature in the cars on view this week at the National Automobile Show and in various hotels in New York.

There is, however, an encouraging tendency to provide devices for better vaporization of the fuel, most of these being in the nature of hot spots or some form of exhaust jacket around a portion of the inlet manifold. In some cases means are provided for manually varying the quantity of heat applied to the manifold. Examples of this are the new Studebaker Special Six which, as shown in the accompanying cut, is provided with a shutter for controlling flow of exhaust gas into jacket around inlet manifold, and the Buick Six in which a shutter in the exhaust pipe is interconnected with the throttle in such a way that the amount of exhaust deflected through the exhaust jacket of the inlet manifold is varied with change in the position of the throttle.

Among the engines employing hot spots are some of the Continental jobs fitted in several cars including, for example, the Columbia. The special engine built for

Jordan by Continental also has a hot spot. Others of the newer cars which have hot spots in various forms are



Manifold layout on the new Studebaker Special Six, showing the lever connected to the shutter which controls flow of exhaust into jacket around inlet manifold

the Goodspeed, Gray, Leach, Mitchell and the Elgin fitted with a Falls engine. The H.C.S. and the new Walker engine used in the Grant car are among the engines fitted with combination inlet and exhaust manifolds cast in a single piece, the latter having a small hot dome to aid in vaporization of the fuel. In the new Rickenbacker and some other cars a ram's horn type of manifold is used in combination with the hot spot, the arrangement being such that fuel deposited on the walls of the ram's horn portion drains toward the cylinder and is vaporized by contact with hot walls in the cylinder head. A variation of the hot spot idea is seen in the new Frontenac in the form of a slotted aluminum cone which is heated by the exhaust at one end and is in contact with inlet gases to which it conducts heat at the other end.

In the Premier engine and the Ansted, which is used in the new Durant Six and in Lexington cars, provision is made whereby fuel thrown out of the air stream is vaporized by contact with exhaust heated ribs on the interior surface of the inlet manifold. The latter is so disposed as to add a minimum of heat to the air, while still providing sufficient heat for vaporization of liquid fuel.

The Dorris engine is equipped with a device called a "distillator," which is intended to go a step further than some of the other vaporizing systems. In this device exhaust heated wells are provided adjacent to the inlet ports. These are so arranged as to trap liquid fuel and vaporize it. Any fuel which is not quickly vaporized runs by gravity from the wells to an exhaust heated compartment called a still, adjacent to the carburetor. The still is so arranged that the heat can be cut off from it in warm weather if desired, but it has been found desirable to use it the year 'round in most cases, and it is said to have resulted in a very marked decrease in the quantity of fuel which passes the pistons and dilutes the lubricating oil.

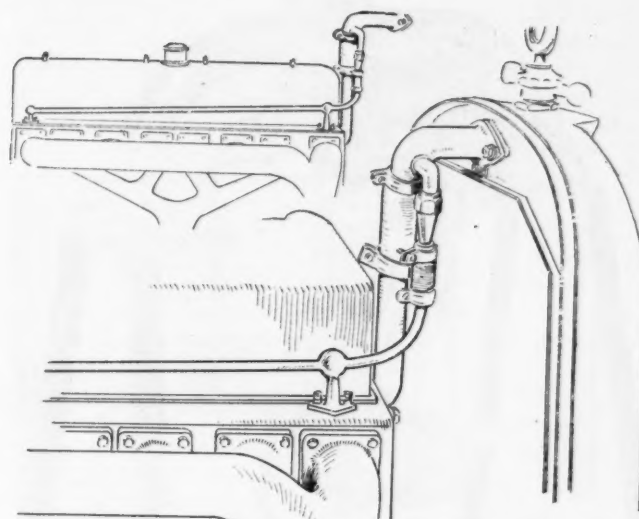
In several of the eight-cylinder engines the inlet manifold is cast integral with a passage connected to the exhaust manifold of the respective blocks at each end. The exhaust gases surge back and forth through this passage and are said to provide ample heat for vaporizing the fuel.

In some cases a water jacketed inlet is still depended upon for providing the heat for vaporization of the fuel, and one new car, the Wills Ste. Claire, has this arrangement. In the Stevens-Duryea, heat is furnished both by a water jacket and by the exhaust.

In the new model Cadillac the carburetor is provided with two thermostats, one of which is arranged to control the mixture proportions so that the charge is somewhat richer when the engine is cold than when it is warm. The second thermostat controls a vent on the float chamber, opening this vent as the temperature increases. A plunger operated by the accelerator pedal is so arranged as to momentarily increase the pressure in the float chamber when the accelerator is opened quickly, thereby giving a richer mixture for acceleration. When the vent to the chamber is opened by the thermostat, however, the enriching action is decreased or eliminated.

Cooling Systems

Turning now to other phases of powerplant construction it is apparent that more attention is being given to the cooling system. Thermostats for control of the circulating water are now used in more cars, having been fitted to the Case, Cole, Haynes and Goodspeed among others of the newer cars or models. Heretofore the thermostat has usually been so arranged as to permit circulation through the engine jacket only and not through the radiator during the warming up period. In



Extra water outlet pipe used on Marmon engine to prevent steam pockets in corners of jackets

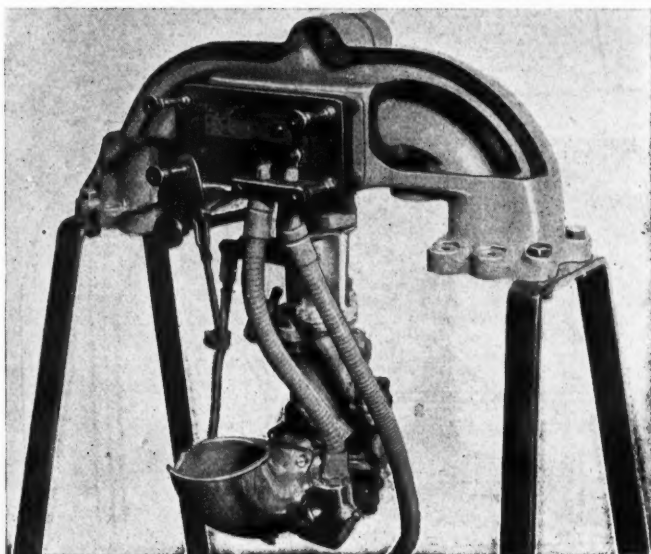
the new Haynes model the thermostat is so installed that the pump circulates the water through the radiator only during the warming period, and opens when the temperature in the jacket has risen to a predetermined point. By this arrangement freezing of the radiator is less likely.

Wider fan belts are seen on some cars, including the Driggs, Dorris and Studebaker. In the Apperson and Olds eights an unusually wide belt is used for driving both the fan and the lighting generator, the fan being mounted on the end of the generator shaft. More convenient means are provided in some cases for adjustment of the tension on the fan belt. In the case of the Elgin this can be done without the use of tools, by simply turning a wing nut. A spring with wing nut adjustment is also provided on the Buick Six, while the new Durant Six, among others, is provided with a convenient eccentric adjustment. On the new Leach Six the fan is positively driven by a bevel gear off the vertical shaft which connects the crankshaft with the overhead camshaft. The fan on the Wills Ste. Claire is provided with a clutch arranged to release automatically when the speed of the engine exceeds a predetermined r.p.m. The Elgin, Dorris and Studebaker cars are provided with larger fans than formerly, while the Dorris has also a larger radiator.

In the latest model Marmon an extra water outlet pipe is connected to the cylinder head at points just above the exhaust ports on cylinders 1 and 6. This we understand has been added to avoid air or steam pockets in the vicinity of the exhaust valves of the cylinders mentioned. The arrangement is shown in an accompanying cut.

Aids to Starting

Lincoln cars are now provided with a special electrical heating device designed to facilitate starting in cold weather. The heating element is made of Chromel wire and is located at the lowest point of the carburetor near the air inlet. When the strangler handle located on the instrument board is pulled out an electric circuit is closed through the heating element, which carries about 100 amperes for eight or ten seconds. The current which passes through the heating element also passes through two sheet metal contact switches shown in the accompanying cut. One leaf of this double switch is composed of Invar and brass, which form a thermostat. This thermostat automatically opens the circuit through the heating



Switch and connections used on the new Lincoln "electrofog," an electrically heated device to assist in starting the engine

element at the end of the period mentioned, thus conserving energy taken from the battery and also preventing the possibility of fire or burning out of the heating element.

The action of the heat upon the liquid gasoline results in the formation of a fog and some permanent gas in the inlet pipe, and this mixture is then quickly drawn into the engine by cranking with the starter. The mixture is very easily ignited and makes it possible to start almost immediately upon cranking the engine.

In tests made prior to the development of the "electrofog" it was found by Lincoln engineers that cranking the engine for thirty seconds at low temperature with the choke closed would cause as much as one-half pint of liquid fuel to pass into the cylinders and by the pistons into the crankcase of the engine. Since cranking for this length of time is not infrequent on any engine which is extremely cold, the utility of such a device as the "electrofog" intending to prevent dilution of lubricant by raw fuel used in priming is apparent.

The new Case and the Franklin are among other cars regularly equipped with primer-heating devices.

Lubrication and Piston Design

A number of efforts to improve the lubrication of engine parts are in evidence. In practically all new cars some system of pressure lubrication is employed. Pressure lubrication to the main and connecting rod bearings, for example, is provided in the Wills Ste. Claire, Duesenberg, Frontenac, Goodspeed, Grant-Walker, Durant Six and Elgin, among others, the last two mentioned having a vacuum control arranged to increase the oil pressure as the load increases. The Velie is provided with a full pressure system in which oil is carried to the main bearings, connecting rod bearings and thence to the wristpins under pressure. In the Grant-Walker engine oil from the valve rocker shaft passes through the rocker arms and into cups on the upper ends of the push rods. Oil which overflows these cups runs down the push rod and lubricates the cam followers and cams. In the Wills Ste. Claire the cam face is drilled and receives oil from a hollow camshaft.

The Cleveland and Nash, among others, are now provided with oil drain cocks which are readily opened from a position above the frame without getting under the engine, while Cleveland, Jordan and Locomobile are among those provided with more accessible or larger oil

fillers. The Locomobile now has two oil pumps, one of which draws oil from the front end of the engine and returns it to the sump. New splash pans which give practically a constant level of oil regardless of how much the car is tilted from side to side, are also provided.

A number of the newer cars and models are fitted with constant clearance pistons. The Frontenac and Premier employ the Nelson expanded type, which is elliptical when cold. The Cole and Stevens-Duryea, among others, employ slotted types. In most cases some provision is made for wiping the oil from the piston skirts or draining it through holes back into the crankcase. A sharp-edged skirt and rings are used on the new Rickenbacker, while the Cleveland, Lincoln and Wills Ste. Claire employ a sharp-edged lower ring to serve as an oil scraper. The new Mitchell engine is provided with pistons in which the heads are polished, and the same is true of the Wills Ste. Claire, in which the pistons are also somewhat longer than formerly. Dort, Lincoln and others are using lighter pistons than heretofore, and a number of concerns are now using aluminum pistons, difficulties formerly encountered with this type having been overcome by improvements in design and manufacture. In the new Duesenberg car Magnalite pistons are regularly furnished, but cast iron pistons are optional.

Valves and Valve Actuation

Aside from the piston valve used in the Goodspeed engine and the rotary valve in the Bournonville Rotary, there is little departure from conventional practice in valve construction, although a number of refinements in design have been incorporated in many engines. Quite a percentage of the newer cars and models are equipped with overhead valves, among these being the Duesenberg, Frontenac, Leach and Wills Ste. Claire. In some cases in which the L-head construction is employed the valves are slightly inclined from the vertical in order to give a shallower pocket in the L and, consequently, a better shaped combustion chamber. The Haynes is one example of this type of construction. Many cars are using alloy steel valves, among these being the Frontenac, which has high tungsten exhaust and low tungsten inlet valves, and the Wills Ste. Claire, which uses valves with stems made of Invar, which has a low coefficient of expansion and therefore requires less clearance allowance. Valves of tulip shape are occasionally seen, as on the Haynes, while other types are frequently made with larger fillets than were formerly used. In the new Frontenac the overhead valves are located in a chamber separate from that in which the camshaft is placed.

The rocking chair type of rocker is seen on Ansted engine, which, in common with Dorris and Cleveland, among others, now uses double valve springs. Haynes, Mitchell and Velie are now among the users of a unit construction or block for accommodating several valve tappets. These are sub-assemblies which facilitate production, and are also readily removable for repair or adjustment. They are apt to be seen in more cars in the future.

Distribution Gearing and Crankshafts

Some engines which formerly used gears are now using chain drive for cam and accessory shaft drives, while several of the new cars also use chain. Among these may be mentioned the new Jordan-Continental, the Frontenac with two chains and the Rickenbacker with a triangular chain drive. In some cases provision is made for tightening the chain by moving the accessory driveshaft sprocket, while in others the new Link Belt spring-adjusted idler is employed.

Where gears are still used for distribution a composition material, such as Fabroil, is generally used, as in the Earl, or spiral bevels, as in the shaft drives on the Duesenberg and Wills Sainte Claire. The last-mentioned make uses a special frictional steadying device on the camshafts as an aid to quietness.

There is a tendency toward the use of heavier and more rigid crankshafts than were formerly employed. Haynes, Locomobile and Jordan are examples of this, while several of the new cars, including the Buick Four and the new Velie Six, have crankshafts of unusually large dimensions as compared to former practice. Shafts designed with a view to better balancing are also in evidence. Frontenac, for example, employs the disk type, while Rickenbacker has the curved-cheek type.

The Duesenberg has connecting rods in which the big end bearing is provided with circumferential ribs to assist in cooling. The Durant and the Wills Sainte Claire are among newer cars laid out in such a way that no shims are required in the bearings.

Cylinders and Mounting

In several of the newer engines the cylinders and upper half of the crankcase are cast in a single piece, but in some instances the bell housing formerly cast also in one piece with the crankcase is now made separately to facilitate certain machining operations. In quite a number of instances the combustion chamber is now machined all over and polished with a view to giving uniform compression pressure in all cylinders and helping to minimize carbon deposits.

While the use of three-point suspension for the engine is becoming rather general, there are still some advocates of four-point rigid mountings. In the Durant Six car the engine is supported by short lugs attached to cross members, instead of to the main frame. Wills Sainte Claire, among others, uses a spring-mounted engine. In this case the springs are placed under each of the forward engine supports and are of the helical type, the flat springs formerly used having been given up.

Electrical Equipment

In some of the newer cars and models the starting motor and lighting generator are being placed adjacent to the gearset, and in one or two instances are driven off the transmission. This gives a cleaner engine compartment and in some cases renders the units rather more accessible. It also distributes the weight to better advantage. Good examples of this type of construction are seen in the Stevens-Duryea and the new Frontenac. Flange mountings are quite generally employed, but there are a number of instances of sleeve-type mounting, and others in which the generator or starting motor are mounted on a separate base, some of the latter being held in place by a substantial strap so arranged as to facilitate removal when this is necessary. The starting motor is provided with a Bendix drive in the great majority of cases, and the pinion meshes gear with teeth cut in the flywheel rim. In a few cases a roller chain and sprocket with over-running clutch is employed for the starter drive.

The tendency to mount the ignition distributor higher up, where it is readily accessible and less apt to become dirty, is worthy of note. Vertical shafts with the distributor mounted high up are now used on the Packard, Essex, Leach and Rickenbacker among others, while on the Frontenac the distributor is horizontal but located near the top of the engine.

General Observations

There are but few novelties in evidence at the show, but there are, as usual, a number of refinements and slight departures from conventional practice. The Rickenbacker, for example, has two flywheels, one at the front and one at the rear of the engine.

There is a general improvement in external appearance, with less complication in control devices for the engine accessories. The Velie, H. C. S., Leach and Frontenac, among others, present an unusually clean external appearance and are good examples of the general tendency toward a more finished design.

Trend Toward Utility Bodies at Show

By George J. Mercer

BODY designs exhibited at the show, as a whole, are good. There are many high spots as regards new designs, refinement in detail on old models as well as the addition of new features and quality of workmanship. All go to make the show rank with the best of its predecessors.

One noticeable feature is that several things that were new on bodies at the Salon are exhibited on bodies at this show. As a rule the Salon has designs that are never considered from the quantity manufacturer's point of view. As an example of this many cars had the trunk or trunk rack at the rear, and this was new even for the Salon. Other points include the extensive use of nickel for the radiators, wire wheels all nickel finished, disk wheels with nickel flanges, more extensive use of dash or cowl lamps and nickel windshield as well as having the lower part of the shield stationary and the use of ventilators on the shroud and at times in the roof.

One other feature that makes this show closely resemble the Salon is that the new body designs shown there are presented here by more than one manufacturer and, in some instances, in the remodeled form that manufacturing in quantities necessitates. One particular instance in this

respect is the showing of bodies in which fabric or leather is used for the body covering in place of metal.

The inside drive cabriolets exhibited by Lincoln, Stevens Duryea and McFarland are the equal of the same designs exhibited at the Salon. At that time the writer predicted that the impetus given the use of fabric for the outer covering by this new model, the enclosed cabriolet, would surely be felt in the industry, and that there would be a number of new models making use of the fabric to get cheaper manufacturing costs. This prediction has been verified, as shown by the illustrations of the Hupmobile, Dodge, Dort and Essex.

These models represent the first efforts of manufacturers to get reduced costs along this line. There is no unified effort, however, as shown by these illustrations, for each has apparently taken advantage of their individual opportunities to use part of their regular equipment. The primary idea in each case has been to get maximum results with minimum costs. Only time can tell what permanent results will follow.

One thing is certain—the use of fabric for panel covering will continue in increased quantity, because designers will not admit that its disadvantages cannot be overcome.

Those who give it serious attention, however, are surprised to find that it has not the inherent low cost that would be supposed. On a sample body, or for special designs, this form of manufacture will be cheap in comparison, but it does not lend itself to quantity production, as does an all metal body, and still give the same uniform results. The method of attaching at the belt is a serious problem. On the inside driven cabriolets this has been well done, but on the bodies made for a cost it has in no instance been well performed. In all previous departures from established custom, however, the initial efforts have been disappointing and we may yet see good results obtained in fastening the fabric on built-for-the-price bodies.

One other new model was the close coupled, four-passenger inside drive body that is really a miniature sedan. This design has not been stabilized as yet. It was shown by the LaFayette, as illustrated, and the rear had a built-in trunk or suitcase carrier. Most of the types at the show have two doors at the front, the same as the regulation coupe. The rear seats are straight across and the front seats are divided with an aisle between. Time is also the factor that will bring uniformity as to the number of doors best suited for this body. It would seem from the writer's observation that the four door body has more advantages than the two. The cost of the additional two doors would be approximately \$10 and it remains to be seen if this is not well worth the expense.

The point is that in this new model the cost problem is being attacked from more than one angle. The fabric covered body represents one end, the close coupled body another. Those who are bringing forward the latter body are saving in weight, using a short wheelbase car, and trusting to a smaller sales resistance by continuing to produce a car that is somewhat similar to an established model and thereby gain increased production.

Many Attempts at Reduced Cost

The question of reduced costs has almost as many angles as there are manufacturers. Those building a medium priced car can make a reduction and yet have a body that will be superior to the low priced car. All makers of this type of body use the straight front, in fact this applies to the large percentage of all the bodies. This makes for economy as does the use of the fabric visor which is almost general. This again is less in cost than the third glass to the windshield.

The close coupled body necessitates the use of something at the rear to cover the space on the chassis. This is provided for by the trunk or suitcase holder. In a few instances the extra tire is carried beyond the trunk, but with others the tire is placed at the side and forward. However, it is quite general to have the bumper form the extreme end of the trunk rack.

The various bodies exhibited, in proportion to models, are about the same as in previous years. The sedan and five passenger phaeton predominate and the regular proportion of coupes and roadsters with a few limousines, broughams, cabriolets and berlines are in evidence.

Of exterior features, the most noticeable include the more extensive use of nickel for the radiators and the use of large circular headlights. These also are quite often nickel or have nickel rims. The windshields on some of the open bodies are nicked and the use of dash or cowl lamps is quite general. These are more often placed directly on top of the shroud panel and not attached to the windshield post as in former years. The nickel extends to the wire wheels also and the disk wheels have nickel rims or bands.

Of the use of wire, disk and artillery wheels the proportions are fairly divided, sometimes all three being seen in one exhibit.

Ventilators are used on the top of the shroud in connection with the stationary windshield and at times they are also used on the sides and on the roofs of the closed bodies. It is logical to assume that the use of the roof ventilator will increase. The tendency is to make bodies, especially those that are produced for the price, with the rear quarter window stationary or leave this window out entirely. Some means must be provided for ventilation in the rear of these bodies, as they are sold for all season cars.

The use of steps is not confined to sport roadsters, but they are used in certain instances in connection with all body models. There are many more in use than last year. Step lights are used quite often and some have the light incorporated within the step casing.

Mudguards are conventional, the full crown predominating, and when made to use with steps usually come further down or rather follow the wheel contour further down.

The soft roof does not show the proportionate gain that it did at the Salon nor is it so well covered by moulding. Use of a moulding on the top to cover the joint has a tendency to make a pocket to hold the water and in time causes leakage. A large number of the bodies use a built up material forming a solid roof panel.

The inside drive cabriolets exhibited are all good examples of this body type. Some have outside joints giving the top the appearance of having the falling feature, although they are not made to drop. The roofs on these bodies have good lines.

Round lines are the predominating feature on radiators, hoods and shrouds as well as for the rear of the bodies. There are fewer severe or angular surfaces than at previous shows. Most of the closed bodies use one wide belt moulding from 1 in. to 1½ in. wide and not raised much at the back.

Doors are made flush, with mouldings and with the overlap, the latter predominating. Both outside and concealed hinges are used and the handles are uniformly the straight pattern. Both nicked and black are used.

The painting combination on the closed bodies combines with the usual display of dark colors a large proportion of cars with bright colors, of which blues and greens, bronze greens and browns in two tones have their share. There are more maroon and black painted cars than at previous shows. Maroon combines remarkably well with the nickel finish and makes the most happy combination at the show, especially on the cars having disk wheels with nickel rims and hub flanges.

Interior Trimmings

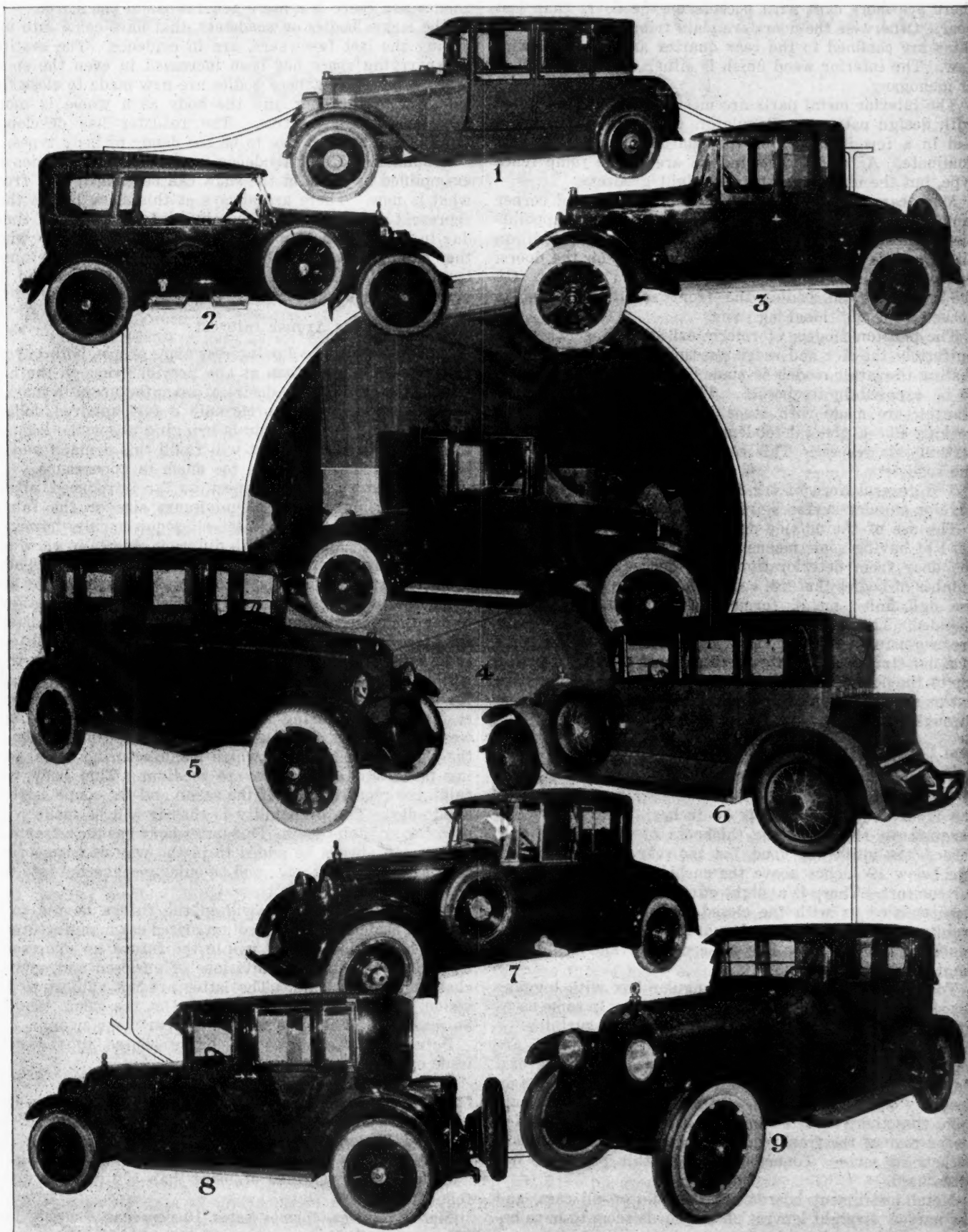
The interior trimmings combine about all that is offered in modest colors. Velours and wool fabrics share about half and a few use worsted. This latter trims in a clear cut manner when well done, but on account of its springy nature is a more expensive material in labor cost than softer fabrics.

Nearly all the fabrics are of a double pattern, having the seat and cushion of a pin stripe and the upper plain. Greys and browns predominate as does the straight pleat. In some instances buttons or the pipe and point, and in rare cases, a plain design are used.

From indications at this show and the Salon there is a tendency to allow the wood interior finish to come back in a limited way. Several bodies use Circassian walnut trim on top of the driving seat and the inside of the pillar that separates the doors. One body has the roof entirely wood finish and there are a few using the wood trim on the doors similar to that in use some years ago.

Interior appointments have not decreased but rather there is a slight tendency to add to their number. A few cars have visible vanity cases and some have concealed

Body Features at the Show



1—Stevens-Duryea inside driven cabriolet. 2—A semi-California top on the H. C. S. 3 and 4—Service models with fabric covered upper structure on Hupmobile and Dodge. 5—A larger service model body on the Dort. 6—McFarlan inside driven cabriolet. 7—The California top as used on the Leach. 8—Lafayette close coupled sedan. 9—Lincoln inside driven cabriolet

cases. Toggle grips are used to a limited extent. One car has arm holders and several have flower holders. One car has a large pocket at the rear of the front seat and there are more cars with pockets on the doors than last year. Otherwise the doors are plain trimmed and the curtains are confined to the rear quarter and the back window. The interior wood finish is either circassian walnut or mahogany.

The interior metal parts are mostly of dull silver finish with design patterns. Regulators are used on the doors and in a few instances on the quarters, but straps predominate. A few of the windows are of the jump fence type, but the majority run in straight grooves.

More cars use the combination dome light and corner lamps than the single dome light. Other metal appointments include the regulation equipment, and in addition all cars have robe rails, some having them on the doors. Some have cushion pillows and foot pillows or rests. On the close coupled bodies the front seat rear panel is pocketed for additional leg room.

The phaeton models (formerly called touring cars) are uniformly the five and seven passenger sizes. The extra seat on the latter models is made both to be concealed and to be exposed in its pocket. These bodies, in some instances, are made with steps instead of runboards, but nothing like a general tendency can be said to be under way in this respect. This could not even be claimed for the roadsters.

The general lines of the bodies are round. The bevel edge or angular surfaces are non-existent.

The use of the outside door handle is general, but the need of having some means of protecting the top edge of the door from deterioration is evidenced by the larger number of bodies that use a non-deteriorating trim. Some use dull finish metal, formed as a moulding and well rounded. The use of wood has made some gain and there are two using a white metal or aluminum, one in the form of a flat strip and the other as a channel that fits over the top of the door. Generally the top edges of the bodies are flat or slightly rounded and only a few carry the body line through the hood to the front.

Seat Backs Low

The average height of the body side on about 20 cars is 23 inches, and the height of the rear seat cushion at the front above the floor is 14 inches. The seating arrangements, so far as the thickness of cushions is concerned, are uniformly good, but the rear seat backs average below 19 inches above the cushion, which is too low for comfort. There is a slight effort to make these bodies close coupled as with the closed models, and the use of trunk racks at the back and guard rail on the rear panel has increased, both on the close coupled and regulation length bodies.

To provide foot rests, the triangular box with luggage space has come into use on the short bodies. In some cases this compartment has been used to carry the curtains.

Curtain compartments in the rear of the front seat are increasing in number. This is provided for in several ways. Some use a bellows pocket that is the cover for an opening; others have doors. On high priced cars it would seem that there is a tendency to use natural wood finish at the rear of the front seat and have lockers and curtain pockets in same. Tonneau lights at this place are not often used.

Metal instrument boards are the rule on all cars, and the narrow straight louvres on the hoods seem to have become more general.

The exteriors of these bodies are plain and without mouldings on the doors, overlap panels being most in use.

The tops are the conventional one man design, but there

are more using a khaki colored fabric with wood bows and nickel metal parts than is customary at this show.

The color combinations have the usual number of light shades and there is a more general use of the stripe.

The larger bodies on roadsters, that have come into use during the last few years, are in evidence. The seating and carrying space has been increased in even the sport type. The tops on these bodies are now made to close the sides up to the door and the body as a whole is more luxurious and attractive. The roadster has developed from humming bird size to be the dandy of body types.

A summary of the tendency in the design of bodies as exemplified by those at the show can be gauged only from what is new. There are always at this show bodies that represent a style that has been in use for a period of time, due to the custom of manufacturers to exhibit only what they can deliver from stock and if they have a large number that will have to be moved before being replaced by newer designs.

Enclosed Bodies Arouse Interest

Enclosed bodies to-day interest more people, both buyers and manufacturers, than at any previous time in the history of the trade. The desire of manufacturers to market an enclosed body at a price only a few hundred dollars above that of the open car is bringing about the keenest interest in any design that will fulfill this demand and at the same time not sacrifice too much in appearance.

No one effort in this respect, so far introduced, either the close coupled body of minimum size or the fabric covered panel body, will meet all requirements, however. Both represent an effort with different objects in view, because two classes of purchasers must be considered. These are divided into those who want simply a business car and those who want one for family use and yet cannot afford to pay the price that an enclosed body of regulation pattern sells for. It would seem that these two divisions will tend to be even more distinct as time sifts out the design that will survive. We may expect a business car that is made for the price and in which appearance is sacrificed to get cost of manufacturing at the lowest possible figure and we may also look for a slightly better appearing body of the close coupled size, in which manufacturing costs, selling price and appearance are medium. This body will fulfill the requirements of the sedan and the coupe as they are to-day. The probability is that it will be made with both two and four doors. This latter body has the advantage that it can always be added to in the way of accessories, such as trunk racks, etc., and be quickly converted into the near special built body class.

These two body types will in the future be the total enclosed models of many medium priced car manufacturers.

The high priced bodies will in the future, as at present, be divided into the two divisions of enclosed and outside chauffeur driven cars. The latter are not subject to revision, but the former, as indicated at the salon, tend to be made in the Berline or two compartment size.

Details of the show will be presented in the next issue of AUTOMOTIVE INDUSTRIES.

THE outstanding feature of the alterations embodied in the new customs tariff schedules since adopted by the New Zealand Parliament is increased preference for British goods.

Included in a schedule of more than 100 pages are the following items:

Motor vehicles, former rates 10 per cent, British, and 20 per cent, foreign, now pay 15 per cent and 25 per cent, respectively; rubber tires were formerly free, even though attached to motor cars, now pay 15 per cent, British, and 25 per cent, foreign.

10,449,785 Cars and Trucks Were Registered in 1921

Figures for the past year show an actual gain equal or greater than that of 1920. Increase amounts to about 14.52 per cent, exceeding all estimates. One car for every 10.10 persons. Fees collected will amount to approximately \$110,000,000, an increase of about \$19,000,000.

DURING 1921 a total of 10,449,785 passenger cars and trucks were registered in the United States. This represents a gain of 1,517,327 over the 1920 registration figures, or a gain of 14.52 per cent.

About 250,000 of this gain, however, is a "statistical" gain and an explanation should be made at the outset. There are two reasons for this situation, one in Minnesota and the other in the District of Columbia. In Minnesota, registrations were formerly on a three-year basis, and in order to get yearly registration figures it was necessary to take only the number of cars registered during the year, which really represented the gain for that year. Thus in 1920 the figures given for Minnesota were 65,517, while this year the figure is given as 328,700, representing an apparent gain of 263,183. This figure is obviously wrong, although the total registration is correct. It is quite logical to assume that about 250,000 cars should be deducted from the actual gain made in 1921 on this account, although this would not affect the total registration figures. Minnesota is now on a yearly registration basis, and there should be no trouble there in the future.

In the District of Columbia, also, confusion has existed and accurate registration figures were exceedingly hard to obtain. The figures presented in the registration tables, however, are accurate for 1921 and there should be no statistical difficulties.

Taking these two points into consideration, however, the actual gain in 1921, which will about equal the gain of 1,335,955 in 1920, exceeds the predictions of some of the most optimistic estimators.

On the basis of these figures there are about 10.10 persons per car in the United States. It is impossible to determine exactly how many of the 10,449,785 vehicles are passenger cars and how many trucks, for there are several States in which they are not segregated in the registration figures. In those States that do make such distinction, however, the totals show that about 11 per cent of the vehicles are trucks. This could probably be taken as an average for the entire country, although there are, of course, exceptions.

Fees Will Exceed \$110,000,000

In the matter of fees collected from motor vehicle registration incomplete figures show that a total of \$98,449,925.66 have been paid into the various State treasuries so far. There are, however, fourteen States from which the amount was not obtainable. The total thus far, however, represents a gain of \$7,474,527.66 over the amount collected in 1920. When complete returns are in for 1921 the amount will probably exceed \$110,000,000. This vast amount of money released for road maintenance purposes should do considerable in the way of increasing the automotive market.

As previously stated, these gains exceed nearly all estimates. Some optimists predicted that there would be a million more cars registered in 1921 than in 1920 but few dared to place their estimates above that figure. While it is quite possible that dealers sold many cars that were on their floors at the beginning of last year, the figures indicate that there is not an enormous amount of unsold cars in the country to-day. The approximate production in 1921 of American automobile factories was \$1,500,000. With a gain in registration almost equal to the number of cars produced it stands to reason that there are at least no more cars in the hands of dealers than at the beginning of 1921.

Sales Have Progressed

Hence, the figures show one thing clearly and that is that despite the period of business depression that has swept over the country, the sale of automobiles has progressed. Sales have gone on to as great an extent as they did when times were normal. It is quite true that not as many cars are produced as American factories are capable of producing, but such a situation may be accounted for in several ways. In the first place production capacity expanded during the war. Since the war exports have fallen off to a considerable extent, due to unfavorable rates of exchange. The export business, however, was not at a complete standstill in 1921 and when the number of cars that were sent abroad is taken into consideration the domestic registration figures assume still larger proportions. And the statistics presented in this article concern that domestic market. They show that the American public has been buying cars. If, despite the period of business depression, the automotive industry has managed to increase the use of its product to the same extent that it did in normal times, it seems logical to assume that the future holds even better prospects. The opinion of automotive manufacturers, expressed at the show, is that business has reached its lowest level and is now on the road to recovery. The year 1922 should see an even greater increase in registration than did 1921.

Numerous changes have taken place in the past year as regards leadership of States in the matters of number of persons per car, greatest number of cars, and greatest increases. California has come to the front as having one car for every 5.19 persons. Last year her ratio was 6.02. South Dakota, while still holding second place, now has one car for every 5.33 persons instead of one for every 5.24. Iowa, formerly one of the banner States in all respects, has dropped back a bit for the present, her registration decreasing by 7297 in 1921, and instead of the ratio of 5.5 persons per car there is now a ratio of 7.31. This situation, however, is one that will be overcome as agricultural conditions are bettered.

In the way of actual gains made during the year Ohio still heads the list of States as having the greatest increase. There were 127,316 more cars registered in Ohio in 1921 than in 1920, and 104,366 more registered in 1920 than in 1919. New York, formerly in second place with a gain in 1920 of 97,628 over 1919, has not only dropped to fifth place in this list, but also showed a decrease in gain, the number this year being but 84,795 higher than in 1920. New York, however, still has more cars registered within her boundaries than any other State. There is little change in the order of these States so far as the ones having the greatest numbers are concerned, although some changes have taken place in those States having fewer cars. Iowa has dropped from sixth to eighth place, and Michigan has gone above Texas.

Sectionally, the cars and trucks are divided about as they have always been, the greatest number being in the manufacturing centers, agricultural States following closely behind. So far as the number of persons per car is concerned, however, agricultural States are in the lead.

It is also of interest to compare these two groups as to

the increases made in each. The statistics show that in eleven States forming the agricultural group there was a total gain of 147,343, while in ten States forming the manufacturing group there was a total gain of 510,388, or nearly half the total gain of the country.

The ten manufacturing States, however, show fewer cars in proportion to population than other sections of the country. The ten States considered in this group, together with their gains actually made and the number of persons per car in each are as follows:

State	Gain	No. persons per car
Massachusetts	58,401	10.11
New York	84,795	13.77
Pennsylvania	119,425	12.64
Michigan	64,320	7.69
Delaware	3,200	10.37
Connecticut	16,326	10.19
Rhode Island	3,346	11.25
New Jersey	43,868	11.69
Indiana	67,635	7.31
Wisconsin	48,672	7.69

Registration of Motor Vehicles

STATE	Total Net Registration	Non-Resident and Re- Registration	Passenger Cars	Commercial Cars	Motorcycles	Total Fees
Alabama	82,343	.....	73,233	9,110	805	\$935,872.19
Arizona	35,220	1,576	30,312	4,908	.....	195,981.75
*Arkansas	67,413	509	66,477	936	171	.....
California	674,830	.....	638,922	35,908	17,603	6,990,981.04
*Colorado	145,370	.....	136,000	9,370	2,860	905,000.00
*Connecticut	135,460	.....	109,160	26,300	.....	.....
*Delaware	21,500	.....	.....	.....	.....	.....
District of Columbia	61,745	.....	54,147	6,976	2,487	383,289.00
Florida	97,837	.....	82,992	14,845	1,296	.....
Georgia	131,942	2,511	.....	.....	1,338	1,770,724.02
Idaho	51,300	.....	.....	.....	.....	.....
Illinois	670,452	.....	590,564	79,906	7,104	6,803,456.22
Indiana	400,342	.....	357,025	43,317	7,524	2,422,171.00
Iowa	430,003	112,994	399,478	30,525	3,897	7,718,926.19
Kansas	291,309	4,205	269,661	21,648	2,271	*3,000,000.00
Kentucky	125,627	8,759	110,602	15,025	1,175	1,771,887.02
*Louisiana	80,000	.....	72,000	8,000	.....	.....
Maine	77,530	7,240	67,593	9,937	1,525	1,004,653.00
*Maryland	140,000	.....	.....	.....	.....	.....
Massachusetts	363,032	.....	307,471	55,561	12,060	4,716,890.00
Michigan	477,037	42,996	426,984	50,053	6,195	6,526,387.01
Minnesota	328,700	.....	301,900	26,800	3,500	5,600,000.00
Mississippi	65,120	.....	58,420	6,700	375	798,306.07
*Missouri	343,386	.....	.....	.....	.....	.....
Montana	54,175	.....	.....	.....	.....	.....
Nebraska	242,557	.....	223,457	19,100	1,705	.....
Nevada	10,819	.....	.....	.....	130	102,800.00
*New Hampshire	42,500	.....	37,030	5,440	.....	.....
New Jersey	271,605	50,039	.....	.....	9,706	3,960,122.71
New Mexico	28,780	.....	23,780	5,000	200	.....
New York	754,085	.....	581,915	172,170	25,024	9,686,561.49
North Carolina	148,684	.....	134,884	13,800	1,276	2,250,000.00
North Dakota	92,643	6,261	90,300	2,343	810	683,052.45
*Ohio	742,713	32,452	647,774	94,939	21,938	6,795,522.99
Oklahoma	221,300	.....	.....	.....	1,013	2,619,713.49
Oregon	118,615	19,103	103,855	14,760	3,164	2,334,782.25
Pennsylvania	689,589	.....	632,541	57,048	21,111	9,443,640.77
Rhode Island	53,721	.....	43,824	9,897	1,683	.....
South Carolina	90,546	1,394	83,349	7,197	756	733,820.01
South Dakota	119,262	.....	110,998	8,264	682	720,587.00
Tennessee	117,025	6,500	102,795	14,230	1,043	1,325,000.00
Texas	467,788	.....	.....	.....	3,902	2,146,873.00
Utah	47,485	.....	40,562	6,923	1,003	441,283.88
Vermont	37,265	4,195	33,778	3,487	965	668,288.50
Virginia	141,000	.....	125,000	16,000	2,200	2,100,000.00
Washington (See Copy)	186,170	.....	157,504	28,666	3,878	2,925,730.74
West Virginia	105,000	.....	90,000	15,000	.....	2,000,000.00
Wisconsin	342,060	.....	320,755	21,305	6,435	3,648,465.00
*Wyoming	26,900	100	24,000	2,900	324	288,083.08
TOTALS	10,449,785	300,834	7,628,949	958,295	181,194	\$98,499,925.66

*Estimated.

NUMBER OF PERSONS PER CAR,
December 31, 1921

State	Population	Car and Truck Registrations	No. Persons Per Car
California	3,426,861	674,830	5.19
So. Dakota	636,547	119,262	5.33
Nebraska	1,296,372	242,557	5.34
Kansas	1,769,257	291,309	6.07
Colorado	939,629	145,370	6.46
Oregon	783,389	118,615	6.60
No. Dakota	646,872	92,643	6.98
Dist. of Col.	437,451	61,745	7.14
Nevada	77,407	10,819	7.15
Wyoming	194,402	26,900	7.22
Minnesota	2,387,125	328,700	7.26
Washington	1,356,621	186,170	7.28
Iowa	2,404,021	430,003	7.31
Indiana	2,930,390	400,342	7.31
Michigan	3,668,412	477,037	7.69
Wisconsin	2,632,067	342,060	7.69
Ohio	5,759,394	742,713	7.75
Idaho	431,866	51,300	8.41
Oklahoma	2,028,283	221,300	9.16
Vermont	352,428	37,265	9.45
Utah	449,396	47,485	9.48
Arizona	334,162	35,220	9.49
Illinois	6,485,280	670,452	9.77
Florida	698,470	97,837	9.88
Maine	768,014	77,530	9.90
Missouri	3,404,055	343,386	9.91
Texas	4,663,228	467,788	9.97
Massachusetts	3,852,356	363,032	10.11
Montana	548,889	54,175	10.13
New Hamp.	433,083	42,500	10.19
Connecticut	1,380,631	135,460	10.19
Maryland	1,449,661	140,000	10.35
Delaware	223,003	21,500	10.37
Rhode Island	604,397	53,721	11.25
New Jersey	3,155,900	271,605	11.69
N. Mexico	360,350	28,780	12.52
Pennsylvania	8,720,017	689,589	12.64
W. Virginia	1,463,701	105,000	13.08
New York	10,385,227	754,085	13.77
Virginia	2,309,187	141,000	15.92
N. Carolina	2,559,123	148,684	17.25
S. Carolina	1,683,724	90,546	18.59
Kentucky	2,416,630	125,627	19.24
Tennessee	2,337,885	117,025	19.97
Alabama	2,348,174	82,343	20.84
Georgia	2,895,832	131,942	21.94
Louisiana	1,798,509	80,000	22.48
Arkansas	1,752,204	67,413	25.99
Mississippi	1,790,618	65,120	27.50
Totals	105,710,620	10,449,785	10.10

GAINS MADE IN CAR AND TRUCK
REGISTRATION

Ohio	127,316
Pennsylvania	119,425
California	105,938
Illinois	101,693
New York	84,795
Indiana	67,635
Michigan	64,320
Massachusetts	58,401
Wisconsin	48,762
Missouri	46,467
New Jersey	43,868
Texas	40,095
West Virginia	26,138
Kansas	25,913
Florida	23,923
Maryland	23,659
Nebraska	19,557
Oklahoma	17,000
Colorado	16,419
Connecticut	16,326
Tennessee	15,173
Oregon	14,825
Maine	14,623
Louisiana	14,000
Kentucky	12,942
Washington	12,250
Arkansas	8,331
North Carolina	7,824
New Hampshire	7,820
Alabama	7,706
Virginia	7,000
New Mexico	6,671
Vermont	5,640
Utah	4,907
Rhode Island	3,346
Delaware	3,200
Wyoming	2,974
North Dakota	1,803
Mississippi	1,636
Arizona	661
Idaho	427
Nevada	355
*District of Columbia	52,033
*Minnesota	263,183
	1,546,980

DECREASES IN CAR AND TRUCK
REGISTRATION

Georgia	12,480
Iowa	7,297
Montana	6,471
South Carolina	2,272
South Dakota	1,133
	29,653
Total gain	1,517,327

CARS AND TRUCKS IN THE
UNITED STATES

New York	754,085
Ohio	742,713
Pennsylvania	689,589
California	674,830
Illinois	670,452
Michigan	477,037
Texas	467,788
Iowa	430,003
Indiana	400,342
Massachusetts	363,032
Missouri	343,386
Wisconsin	342,060
Minnesota	328,700
Kansas	291,309
New Jersey	271,605
Nebraska	242,557
Oklahoma	221,300
Washington	186,170
North Carolina	148,684
Colorado	145,370
Virginia	141,000
Maryland	140,000
Connecticut	135,460
Georgia	131,942
Kentucky	125,672
South Dakota	119,262
Oregon	118,615
Tennessee	117,025
West Virginia	105,000
Florida	97,837
North Dakota	92,643
South Carolina	90,546
Alabama	82,343
Louisiana	80,000
Maine	77,530
Arkansas	67,413
Mississippi	65,120
District of Columbia	54,175
Montana	53,721
Rhode Island	51,300
Idaho	47,500
Utah	42,500
New Hampshire	37,265
Vermont	35,220
Arizona	28,780
New Mexico	26,900
Wyoming	21,500
Delaware	10,819
Nevada	
Total	10,449,785

*See text for information.

In the agricultural States the number of persons per car is somewhat larger, although the gains were smaller. It is worthy of note that while South Dakota registrations decreased by 1133 the State stands second on the list so far as the number of persons per car is concerned. The same statistics for nine agricultural States are as follows:

State	Gain	Number of persons per car
North Dakota	1,803	6.98
South Dakota	1,133	5.33
Kansas	25,913	6.07
Nebraska	19,557	5.34
Oregon	4,825	6.60
Oklahoma	17,000	9.16
Texas	40,095	9.97
Washington	12,250	7.28
Iowa	7,297	7.31

In the mining states of the West the amount of gains must be studied in connection with the population. While Colorado only increased the number of cars registered by 16,419, the State is well toward the top of the list, showing the number of persons per car. Her ratio in that respect is 6.46. New Mexico is the lowest of this group in this respect, having 12.52 persons per car. New Mexico, however, has a large foreign population, and all these facts must be considered in attempting to analyze markets on the basis of registration figures. In those states that have the best educational advantages and the more modern

methods in all respects will be found the lowest ratios of persons per car.

The same situation holds true in the Southern States. A large negro population, as well as a poorer element of whites, lack of good roads and modern educational facilities has caused the number of persons per car to be particularly high in that group.

The greatest percentage gain was made in West Virginia, where registrations increased 33.14 per cent. New Mexico also increased by 30.07 per cent.

The ten states having the highest percentage gains are as follows:

Per cent	Per cent
West Virginia	33.14
Florida	32.39
New Mexico	30.07
Ohio	26.05
Maine	23.08
Pennsylvania	26.69
New Hampshire	22.54
Louisiana	21.21
Massachusetts	20.33
Indiana	20.32

Motorcycle registration figures are as yet incomplete. The figures thus far received do not bring the total up as high as last year, but when complete returns are received it is believed that there will be a small gain for the entire country.

Trailers and tractor registrations, particularly the latter, are not segregated in all States. In some few instances the trailers are included in the truck registration, and consequently become a part of the whole figure for passenger cars and trucks. This is true in only a few cases, however, and in States where there are probably few

Motor Vehicle Registration 1912 to 1921

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Alabama	3,385	5,435	8,078	11,925	21,636	32,873	46,171	58,898	74,637	82,343
Arizona	1,624	3,098	5,040	7,318	12,124	19,830	23,905	28,979	34,559	35,220
Arkansas	2,250	3,000	5,642	8,021	15,000	28,693	41,458	49,450	59,082	67,413
California	88,699	60,000	123,516	163,795	232,440	306,916	364,800	477,450	568,892	674,830
Colorado	8,950	13,135	17,756	27,568	43,296	66,850	83,630	104,865	128,951	145,370
Connecticut	24,101	27,189	33,009	43,985	61,855	85,724	92,606	109,651	119,134	135,460
Delaware	1,732	2,350	3,050	4,657	7,102	10,700	12,955	16,152	18,300	21,500
Dist. of Col.	1,732	2,373	4,833	8,009	13,118	15,493	30,490	35,400	9,712	61,745
Florida	1,749	2,372	3,368	10,850	20,718	27,000	54,186	55,400	*73,914	97,837
Georgia	19,120	18,500	20,916	25,671	47,579	70,357	99,800	127,326	144,422	131,942
Idaho	2,500	2,173	3,346	7,071	12,999	24,731	32,289	42,220	50,873	51,300
Illinois	68,073	94,656	131,140	180,832	248,429	340,292	389,620	478,438	568,759	670,452
Indiana	54,334	47,000	66,400	96,915	139,317	192,192	227,160	277,255	332,707	400,342
Iowa	47,188	75,088	112,134	152,134	198,602	254,317	278,313	363,857	437,300	430,003
Kansas	22,000	34,366	49,374	72,520	112,122	159,343	189,163	227,752	265,396	291,309
Kentucky	5,147	7,210	11,746	19,500	31,700	47,416	65,870	90,641	112,685	125,627
Louisiana	7,000	7,200	12,000	11,380	17,000	28,394	40,000	51,000	66,000	80,000
Maine	7,743	10,570	15,700	21,545	30,972	41,499	40,372	53,425	62,907	77,530
Maryland	10,487	14,254	20,213	31,047	44,245	60,943	74,666	95,634	*116,341	140,000
Massachusetts	50,132	62,660	77,246	102,633	136,809	174,274	193,497	247,183	304,631	363,032
Michigan	39,579	54,366	76,389	114,845	160,052	247,006	262,125	325,813	412,717	477,037
Minnesota	29,000	37,800	67,862	93,269	46,000	54,009	204,458	259,743	65,517	328,700
Mississippi	2,895	3,000	5,964	9,669	25,000	36,600	48,400	45,030	63,484	65,120
Missouri	24,379	38,140	54,468	76,462	103,587	147,528	188,040	244,363	298,919	343,386
Montana	2,000	5,686	10,172	14,499	24,440	42,696	51,037	59,325	60,646	54,175
Nebraska	33,861	25,617	40,929	59,140	100,534	148,101	175,409	192,000	223,000	242,557
Nevada	900	1,131	1,487	2,009	4,919	7,160	8,159	9,305	10,464	10,819
New Hampshire	5,764	7,420	9,571	13,449	17,508	22,267	24,817	31,625	34,680	42,500
New Jersey	43,056	48,892	60,247	78,232	104,341	134,964	155,519	190,873	227,737	271,605
New Mexico	911	1,721	2,945	5,100	8,228	8,457	15,000	18,077	22,109	28,780
New York	107,262	134,405	169,966	234,032	317,866	411,567	463,758	571,662	669,290	754,085
North Carolina	6,178	10,000	14,677	21,000	33,904	55,950	72,313	109,017	140,860	148,684
North Dakota	8,997	13,075	15,701	24,908	40,446	62,993	71,627	82,885	90,840	92,643
Ohio	63,066	86,054	122,504	181,332	252,431	346,772	412,775	511,031	615,397	742,713
Oklahoma	6,524	7,934	13,500	25,032	52,718	100,199	121,500	144,500	204,300	221,300
Oregon	10,165	13,957	16,447	23,585	33,917	48,632	63,324	83,332	103,790	118,615
Pennsylvania	59,357	76,178	112,854	160,137	230,578	325,153	394,186	482,117	570,164	689,589
Rhode Island	8,565	10,294	12,331	16,362	21,406	37,046	36,218	44,833	50,375	53,721
South Carolina	10,000	11,500	14,500	15,000	19,000	39,527	55,492	70,143	92,819	90,546
South Dakota	14,481	14,578	20,929	28,784	44,271	67,158	90,521	104,628	120,395	119,262
Tennessee	35,187	54,362	79,769	7,618	30,000	48,000	63,000	80,422	101,852	117,025
Texas	35,187	54,362	64,732	90,000	197,687	213,334	251,118	331,310	427,693	467,788
Utah	2,576	4,021	2,253	9,177	13,507	24,076	32,273	35,236	42,578	47,485
Vermont	4,283	5,918	8,256	11,499	15,671	20,369	22,655	26,807	31,625	37,265
Virginia	5,760	9,022	14,002	21,357	35,426	55,000	72,228	94,120	134,000	141,000
Washington	13,990	24,178	30,253	38,823	60,734	91,337	117,278	148,775	*173,920	186,170
W. Virginia	5,349	5,088	6,159	13,279	20,571	31,300	38,750	50,203	78,862	105,000
Wisconsin	24,578	34,646	53,161	79,791	115,637	164,531	196,844	236,981	293,298	342,060
Wyoming	1,300	1,584	2,428	3,976	7,125	12,523	16,200	21,371	23,926	26,900
Totals	1,033,096	1,287,558	1,768,720	2,479,742	3,584,567	4,992,152	6,105,974	7,596,503	8,932,458	10,449,785

*Estimated.

trailers in use, so the total would not be materially changed were they deducted. In other places the trailers are not registered. A table showing the number of trailers in all States where they are segregated is in preparation, and will be presented when revised registration figures are shown in the Statistical Issue of AUTOMOTIVE INDUSTRIES in February.

The figures presented in this article are accurate and final in most cases, but slight revisions will be necessary in certain instances. In some states complete returns from various counties have not yet been received and in others there has been a delay in tabulation, so that final figures are not available. A final revised table will appear on Feb. 16, however, in the Statistical Number of AUTOMOTIVE INDUSTRIES.

High Taxes Decreased Italy's Production

THAT high taxes restrict the development of the motor movement and are less profitable to the state than moderate taxes is the lesson learned by the Italian Government. A couple of years ago, by making use of the argument that automobiles were purely luxuries, considerable increases were made in the annual state taxes; cars of 50 hp. and over, notably, had to pay 15,000 liras annually to the state. As the Italian Government formula for calculating horsepower is very disadvantageous, several high-grade Italian cars came into this class.

The effect on the industry has been so pernicious that the promoters of the high-taxation policy have been among the first to claim a revision. Commandatore Agnelli, president of the Fiat company, predicted when the new taxes went into effect that in his factory alone it would cause 5000 men to be laid off. Under the new law, which goes into effect Jan. 1, 1922, the taxes are reduced 56 per cent on 10-hp. cars, 44.5 per cent for 20-hp. cars, 41.5 per cent for 25-hp., 35 per cent for 30-hp., 29 per cent for 35-hp., 38.5 per cent for a 40-hp., 37.5 per cent for 45-hp., 28 per cent for 50-hp. and over.

For motor buses and trucks the taxes have been slightly increased, but these vehicles were always reasonably treated compared with passenger cars. When fitted with pneumatic tires, buses and trucks pay 30 per cent less than when solids are used. This measure has been taken in order to protect the roads against the destructive effect of heavy trucks with solid tires. In Italy very few trucks of more than 1½-ton load ca-

capacity are run on pneumatics. Taxicabs are to pay the same taxes as private cars, with a refund of 25 per cent. Under the horsepower formula two-stroke engines are given an advantage in order to encourage the development of this type. The mere announcement of the reduction in automobile taxes has been sufficient to cause a considerable increase in local sales.

Spain Considering Reduction of Duties on Automobiles

DESPITE the fact that Spain will probably increase import duties on many products after January 1, it is quite likely that the tariff on automobiles will be lowered, says a dispatch to the Department of Commerce at Washington from Commercial Attaché Cunningham at Madrid. This is encouraging news to the American automobile manufacturer, although there remains the menace that the tariff on other articles, coupled with considerable labor unrest, is adversely affecting the normal recovery of trade and industry. Then, too, petroleum is one of the products upon which a higher import duty will probably be placed.

The cable dispatch said the cost of living is continuing to rise in Spain, although lower prices are predicted. Increased taxes to meet the budget estimates for the year 1922 are probable.

Transportation difficulties are encountered, partly on account of seasonal shipment of grains, fertilizer and coal causing congestion and because repairs and maintenance continue to be inadequate.

Modern Facilities for Quantity Production of Pistons

How aluminum pistons used in Maxwell car are manufactured. The various operations employed are described in sequence, the type and make of machine employed being given in each case. Special precautions are taken in machining and gaging to insure maintenance of close limits.

By J. Edward Schipper

THE manufacture of the slotted type of "constant clearance" piston offers an exceptional opportunity for ingenuity in the layout of machinery. The pistons are of very thin section aluminum and consequently require careful handling in order to maintain the desired amount of accuracy. The operations are of such nature that the most up-to-date types of machinery can be employed to advantage in reducing the unit cost of these parts. For the Maxwell pistons the raw Lynite castings weigh 1.39 lb. and the finished pistons weigh .94 lb., hence a little less than $\frac{1}{2}$ lb. of aluminum is machined off each casting in the manufacture of the finished piston, which is shown in the drawing Fig. 1. As will be noted, it is of a modified slipper type with three rings above the wrist pin. There is a horizontal slot cut around the piston below the lower ring land and a relief formed in the casting adjacent to each of the piston pin bosses. There is also a vertical slot which takes up the expansion of the piston under heat.

The entire layout of the piston department at the Maxwell plant is designed to give a minimum of manual handling to the pistons, and the equipment is such that the machining operations are done with maximum rapidity and in the most concentrated manufacturing space.

A sample of each shipment of castings is sent to the laboratory for a material examination and after satisfactorily passing the laboratory test, the castings are released to the manufacturing department. The pistons are then loaded on a track carrier immediately adjacent to the machine which performs the first operation and from then on they are slid along this carrier from machine to machine until they are completed. The machines are arranged in two rows on each side of this carrier, which is a sort of

double track and visible in several of the views of individual operations shown herewith.

The first machining operation is performed on a special Bardons & Oliver lathe. The operation is to bore the open end of the piston, chamfer it and cut it to length. There is also a centering operation on the head end. The piston is chucked on a quick-acting, self-centering adapter, which holds the piston from within. It is an air expanding type of chuck. The operation is located from the under side of the piston head and from the interior walls of the casting.

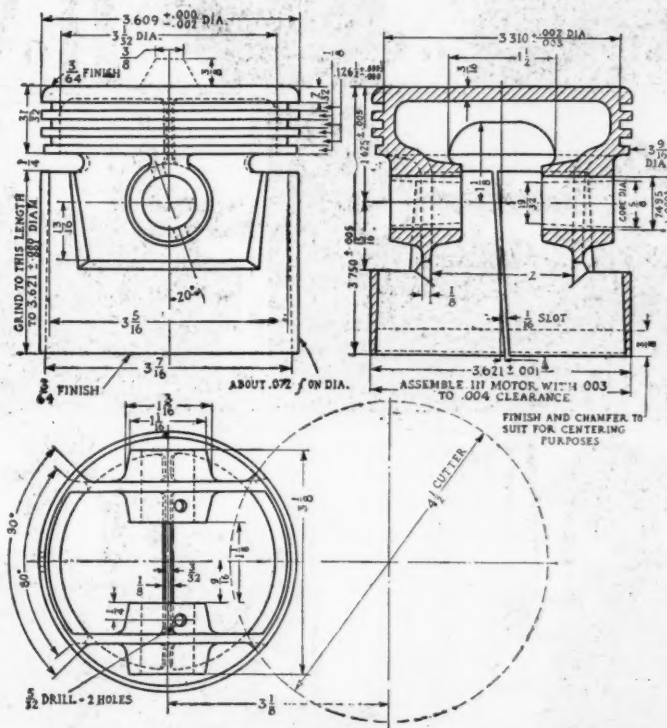
Bearing against the interior walls of the casting there are seven plunger points on the adapter. This operation is shown in Fig. 2.

Location for the second operation, which is the rough drilling of the wrist pin holes is from the open end of the piston bore and from the bottom face. This operation is shown in Fig. 3 and is performed upon a Cincinnati drill press capable of 91 pistons per hr. There is an equalizing clamp against the piston head which holds the piston firmly in position for the operation.

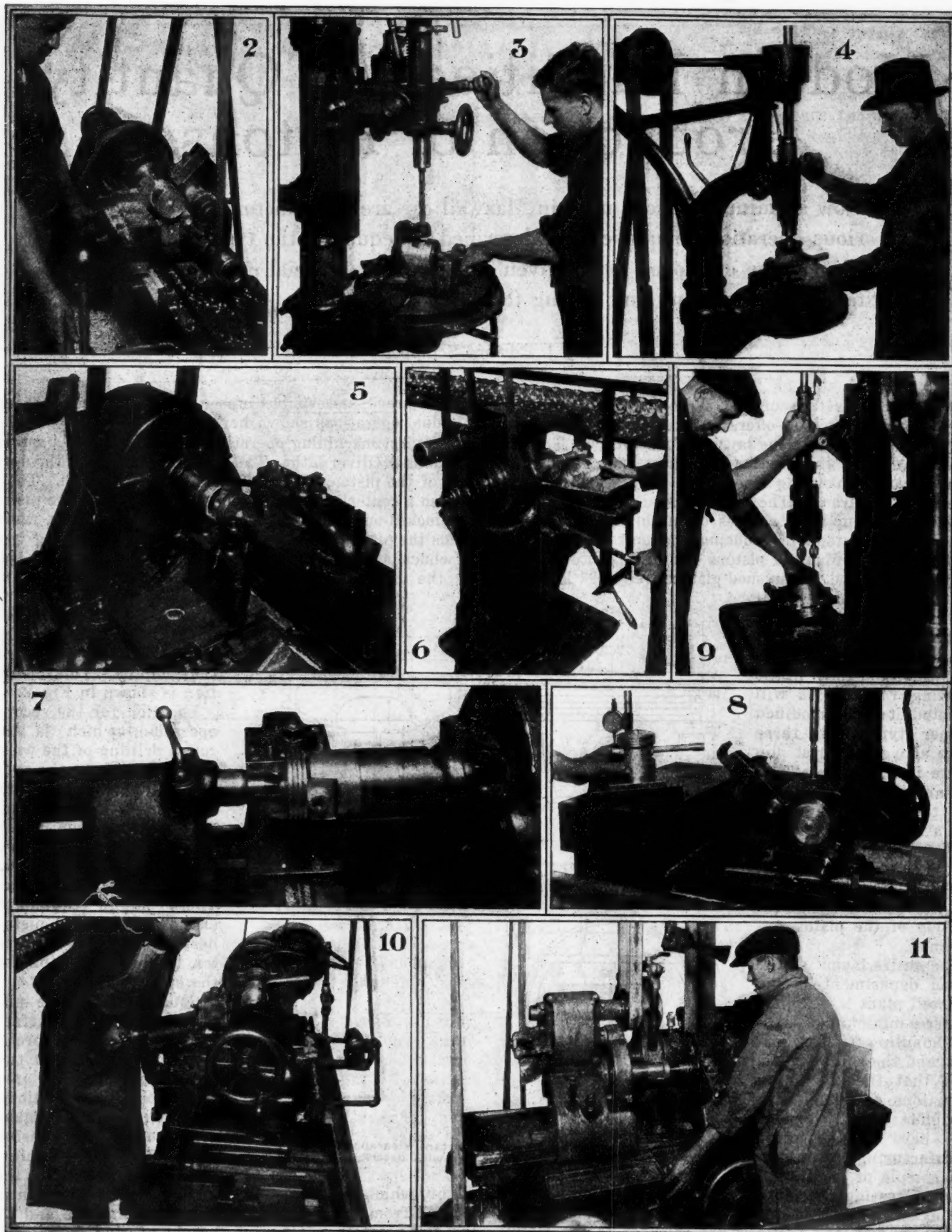
Squareness of the piston's cylindrical surface with the wrist pin bore is secured by the next two operations, which are really locating operations, although the cuts taken are required in the piston itself. In finish chamfering the open end of the

piston, which operation is shown in Fig. 4, the piston is located from a plug through the wrist pin hole and by the self-centering action of the chamfering tool itself. By permitting the piston to float on the plug through the wrist pin, the chamfer is automatically made square.

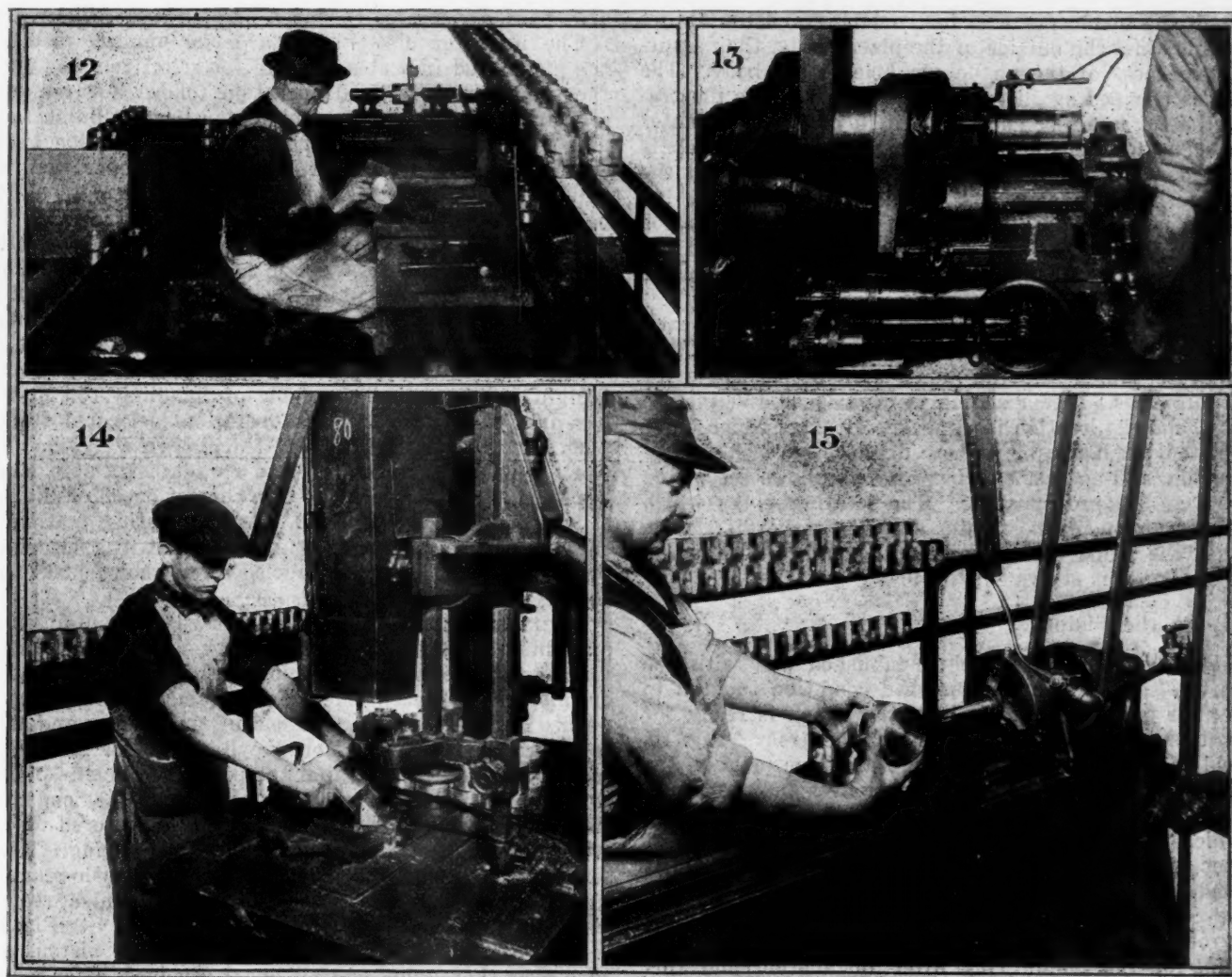
With the chamfering operation completed in this way, the chamfered surface can be used for locating practically all other operations. The work of chamfering is done on a Barnes drill press. It is a very quick operation



1—Maxwell slotted type of constant clearance piston whose manufacture is herewith described



2—Boring open end, centering, chamfering and cutting piston castings to length. 3—Rough drilling piston pin holes. 4—Finish chamfering the open end. Note the self-centering operation of this tool, most of the subsequent operations are located from the chamfer. 5—Machine which displaces four others for rough turning outside diameter, rough turning ring grooves, rough facing the head end of the piston and finish forming the radius on the piston head. 6—Milling horizontal slots of both sides of piston below bottom land. 7—Finish turning the outside diameter and finish turning the piston ring grooves on a Reed lathe. 8—Drilling and reaming wrist pin holes. This is a semi-finish operation on a Kern drill press. 9—Drilling two oil holes in the piston pin bosses. 10—Finish turning grooves. This work is done on diamond point tools and held to a limit of .0005 in. 11—Grinding outside diameter. This work is performed on either a Norton or Landis grinder with a Crystolon wheel, using lard, oil and kerosene for lubrication



12—Inspection given after grinding showing the gages employed and also giving an idea of the rack or track along which the pistons are pushed. 13—Facing head end of piston, cleaning burrs, and cutting off the centering boss. There are two tools on this machine, one cuts off the boss and the other faces the head. 14—Sawing the vertical clearance slot in the piston. 15—Reaming the piston pin holes. The pistons are pushed by hand to the reamer bar which incorporates cylindrical centering or piloting parts on each side of the cutting portion of the reamer bar

making a 30 deg. cut $1/16$ in. in depth at the rate of 250 pistons per hr.

Given the chamfered end of the piston to work from, the turning of the piston skirt and other operations on the wall and head can be accurately performed. The operations shown in Fig. 5 are all performed on a semi-automatic LeBlond Multi-Cut lathe. This is a special machine for piston purposes. The operation is the rough turning of the outside diameter, the rough turning of the piston ring grooves, rough facing of the head end of the piston and the finish forming of a radius on the piston head. The latter radius is simply to remove the sharp edge from the top of the piston, which projects for a slight distance into the combustion chamber at the top of the stroke. There are two machines on this work each capable of turning out 65 pistons per hr., and each of these machines, due to the compounding of the operations, replaces four others, so that in this department, these two LeBlond machines are performing the work of eight ordinary piston turning machines. As will be noted in Fig. 5, the piston is clamped against the chamfered face and centered, the work being driven by a lug which projects between the piston pin bosses in the center of the piston.

Horizontal slots are milled on each side of the piston below the bottom ring land. These relief slots are what makes the piston a modified slipper type, as they separate the head portions which carry the ring from the skirt.

The piston in the fixture fits over a dowel through the piston pin hole and rests in a V block. The cut is made on a Toledo hand mill, which is capable of 150 pistons per hr. The same operator who handles the chamfering operation shown in Fig. 4 also handles this milling operation which is shown in Fig. 6, both of them being very fast operations and capable of keeping ahead of production on the other machines.

The outside diameter and the tops of the ring grooves are finish turned on a Reed lathe shown in Fig. 7 which is equipped with a special tool block with two cutters for this work. One cutter first comes into operation and turns the piston down to the proper outside diameter and after this tool has passed by, another cutter comes into operation for the top of the ring groove. The two cutters are so spaced that the cutter which finish turns the outside diameter, completes its work as the cutter which turns the tops of the ring grooves passes by the bottom groove. Location for the work is from the chamfer on the bottom and the piston is centered as in the previous operations in the center which has been established in the centering boss on the head. As each of these machines is only capable of 69 per hr., the equipment for the department consists of two similar machines.

Drilling and reaming of the piston pin hole to a semi-finished condition is accomplished on a Kern drill press. The operation is illustrated in Fig. 8. A plug is first put

through the piston pin hole for centering and the fixture locates against the outside of the piston body, thus assuring squareness of the piston pin hole to the body. The piston is clamped against a stop, as shown in the illustration, the clamp being shown lifted in order to be better seen. The first operation is with a core drill, which is then removed from the quick, detachable chuck and the reamer, which is shown lying on the table of the machine in the illustration, is inserted in its place. The operator gages the piston for the distance from the bottom of the piston face to the center of the piston pin hole on the amplifying gage also shown in the illustration.

Two 5/32 in. oil holes are drilled simultaneously in each piston pin boss by means of a Cincinnati drill with a special fixture, which sets the piston at a proper angle for these oil holes. The machine is capable of 150 pistons per hr., and the location is by means of plugs which enter the piston pin holes for a short distance on each side of the piston, and against a V block which allows the piston to rest at the proper angle. The locating plugs which enter the piston pin hole enter only for a short distance, so that the drills cannot come into contact with them. This operation is shown in Fig. 9.

Finishing the Piston

With all centers accurately established and with the rings, walls, etc., in a semi-finished condition squared to the center of the piston pin hole, the piston is ready for finish turning. The finish turning of the groove, Fig. 10, is held to very close limits. There are four tools on the machine, three of which are for the grooves and the fourth for the recess, which is turned below the bottom ring, at which point the piston is smaller in diameter than at the top of the ring grooves. A tolerance of but .0005 is allowed on the width of the groove. A rolling gage is employed to check this and the gage must roll all around the grooves without play or bind. This is to insure free working of the piston ring after installation and this rolling gage check prevents any possibility of a narrow point somewhere in the groove. Diamond point tools are employed in order to secure a good finish. In the inspection on this particular operation, the pistons are thrown out for the least discernible roughness. The recess on the bottom land is .0005 under size. A three-sided gage is employed to check these grooves for squareness and depth. The gage must fit into the groove on two opposite sides of the piston in order to establish squareness. The operation is located on the chamfer at the bottom of the piston and is centered in the usual way in the centering boss on the head.

Grinding of the piston is accomplished on either a Norton or Landis grinder. This is a finish grinding operation, location being from the chamfer at the bottom of the piston, and the piston is centered in the centering boss on the head. A Crystolon wheel is employed and a lubricant consisting of lard, oil and kerosene designed to keep the grinding wheel from loading, is employed. This grinding operation is in accordance with standard practice and is illustrated in Fig. 11. Following the finish grind, the pistons are given a 100 per cent inspection. The outside diameter is inspected by micrometer and a limit of plus or minus .0005 in. is allowed. The ring grooves are inspected by a rolling gage, a limit of plus or minus .0025 in. being allowed here. They are also tested for eccentricity on a Brown & Sharpe gage, the piston being located on the chamfer and centered in exactly the same way as in the manufacturing machine. These operations are shown clearly in Fig. 12, the Brown & Sharpe gage being in the background with a piston in place. A good idea of the track or rail type of rack along which the pistons

are passed is also secured from this illustration.

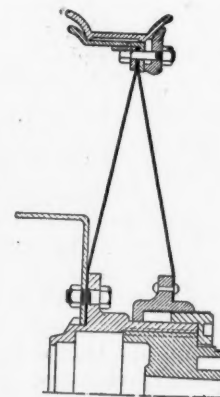
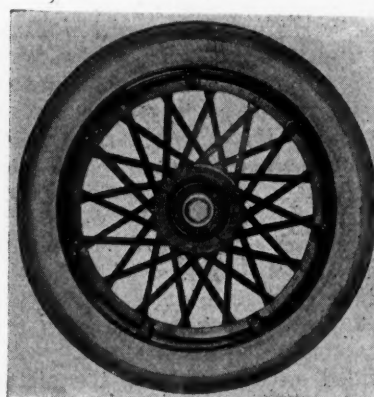
The inspector also stamps a serial number inside of the piston and indicates the size for selective assembly at the same time. A hand operation follows for removing all burrs, following which the piston head is finish faced and the centering boss removed in the operation shown in Fig. 13. There are two tools in this operation, one which faces the piston and the other which cuts off the boss. These are both visible in the illustration. The operator gages the piston for length after this operation and also for squareness of the head with the piston pin hole. Both of these gaging operations are performed on go and no-go gages. The machine employed is a Cincinnati lathe capable of 50 per hr. There are three of these.

The vertical clearing slot in the piston is sawed on a Wright steel band saw capable of handling 150 pistons per hr. The piston for this operation is located from a plug in the piston pin hole and against a V block. The work is pushed against the saw up against a stop which is placed at a point such that the correct depth of the saw slot is automatically assured. An interesting feature of the saw which is shown in Fig. 14, is that it is adjustable for squareness of cut, the knurled screw shown just above the piston being for this purpose.

An unusual reaming operation is used for semi-finishing and finish reaming the wrist pin holes. An expansion reamer with six flutes is employed, there being a locating or pilot part on each side of the reamer. The piston is pushed by hand up over the end of the reamer and as it is passed along, it pilots on a cylindrical portion of the reamer bar, so arranged that the piston pin hole is piloted throughout the entire reaming operation, the length of the reamer being such that the piston is centered on the cylindrical part of the reamer while it is cutting. Kerosene only is used for a lubricant and the finish reaming cut is only a very light one, as the semi-finish reamer leaves only .001 to .005 in. for the finish ream. See Fig. 15.

After the wrist pin holes are finished, the pistons are gone over thoroughly and all burrs removed, after which they are washed in gasoline and blown out with air. They are placed on a skid which takes them to the inspection department and they are there given a thorough going over for squareness of head with the piston pin hole, alignment of the piston pin hole in each boss, they are gaged for length, depth of ring grooves, squareness in all directions and, also, attention is given the finish and care taken to guard against cracks or blow holes. They are stamped by the inspector and passed on to finished stock. The weighing of the pistons is taken care of in conjunction with connecting rods at time of assembly in the engine.

Lattice Tension Wheel



The above photograph and drawing illustrates the Thompson lattice wheel which was described in *Automotive Industries* of Dec. 29, page 1283

A Crank Arm Turning Machine

Device simultaneously turns the non-circular contours of all of the arms of an engine crankshaft. This gives a better balance than is likely to be obtained with unfinished crank arms. Development of airplane production. Circular tool used and tool block rocked to maintain cutting angle.

By P. M. Heldt

AIRCRAFT engine crankshafts are usually turned or finished all over, partly because in this way it is possible to make the parts more accurately to dimensions, thereby saving weight, and partly because it tends to give a better balance than can be obtained in any other way. Recently, automobile manufacturers have begun to finish the crank arms, chiefly, it appears, with a view to securing the advantages of improved balance which are gained thereby.

The Gordon Form Lathe Co. has developed a crank arm turning lathe which turns all the arms of a crankshaft in one operation. This lathe turns the crankshaft arms the same as a regular engine lathe would turn a round piece of work, from which conclusions may be drawn as to the time required for the operation.

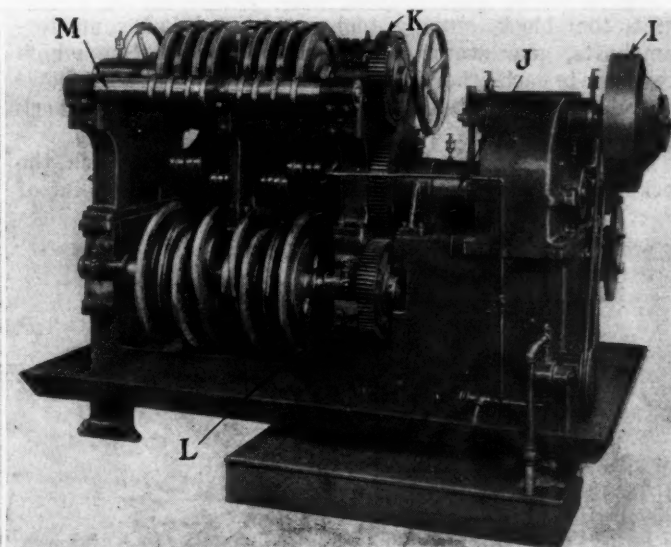
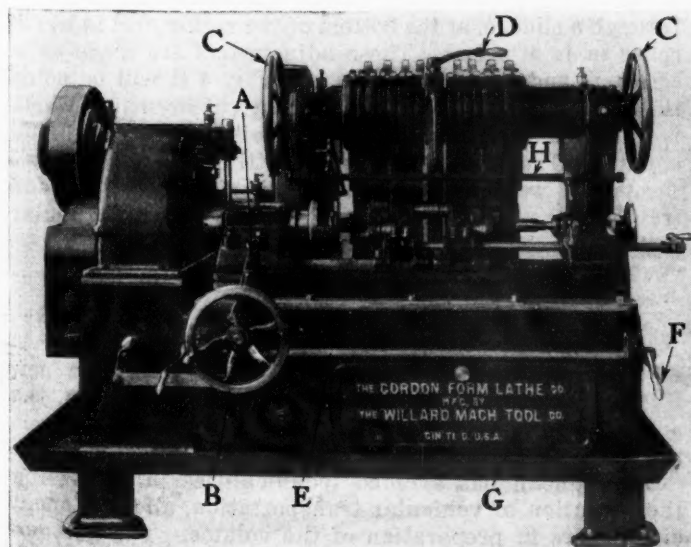
The machine has been designed to permit of heavy cuts and feeds, being of very rigid construction. The accompanying cuts are of a crank arm turning lathe used by the Studebaker Corp. From Fig. 1, which is a front view, it will be seen that there are eight rocker arms—the same number as there are arms on the crankshaft to be turned.

This crank arm turning lathe differs from a standard engine lathe in the following respects: The cutting tools are held in a tool block which rotates in the rocker arm. They are placed in the back of the work and swing from a 6-in. diameter overarm shaft, to and from the crankshaft, as the contour of the crank surface requires. The rocker arms are held in a fixed plane. The spacing of the rocker arms to coincide with the spacing of the different crank arms is taken care of by spacing collars on the overarm, and by guide plates fixed to the main frame of the ma-

chine which are inserted in the rocker arm below the tool block. In this manner the rocker arm is guided at both top and bottom.

The feed of the work is obtained by a longitudinal travel of the platen, which slides in the frame of the main bed. The platen is driven by screw feed, and carries the work across the point of the cutting tool. There is a feed gear quadrant connected to the feed screw at the front end of the machine which has a large range to take care of, both fine and coarse feeds. An automatic trip is provided which throws out the feed at lever A at the conclusion of the cut across the crank arm. After finishing each cut the platen is returned to its starting position by a hand-wheel B.

Headstock, tailstock and steady rests are bolted to the platen of the machine, making them one unit which travels with the work. The machine has been arranged for a roughing and a finishing cut. This is controlled by two eccentric bushings which are located in the outer bearings of the overarm shafts, the change-over being effected by means of a large capstan wheel C. After the overarm shaft has been thrown in either the roughing or the finishing position it is locked by lever D. This overarm shaft is locked at the central overarm support, which is a housing bolted to the main frame of the machine. Starting and stopping of the machine is accomplished by means of a shaft E in front, with a handle F on each end. With this arrangement the machine can be quickly started and stopped for unloading and loading. Ample chip clearance has been allowed between the bottom of the rocker arm and platen, the chips falling directly into the chip pan and



Figs. 1 and 2—Front and rear views of Gordon crank arm turning machine

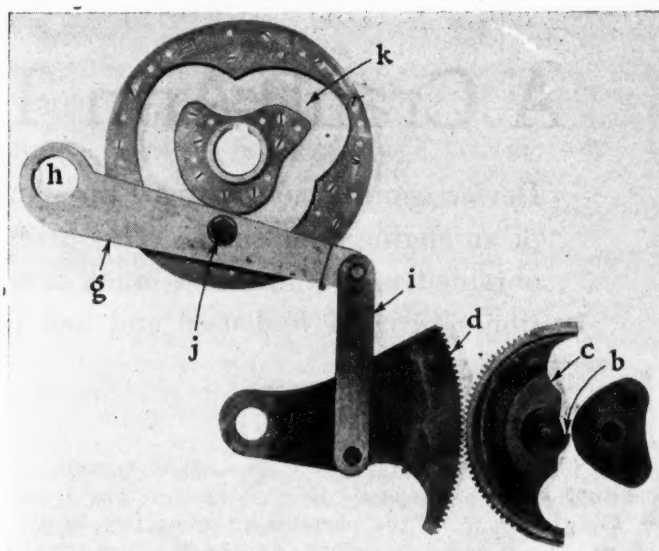
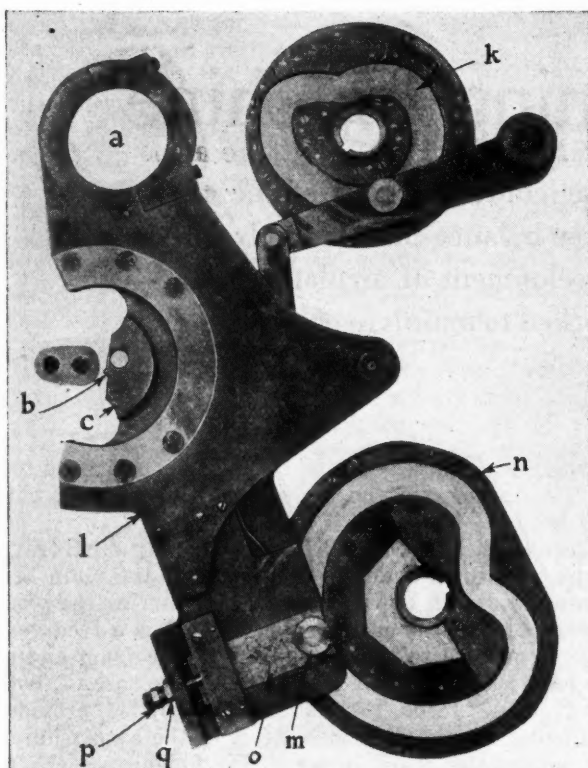


Fig. 3 (on left)—Rocker arms, tool block, cutting tool, upper and lower master camshafts, gear sector and levers. Fig. 4 (above)—Showing mechanism for tilting tool so as to maintain the same angularity relative to the surface being cut

being removed through the door G. Cutting fluid is applied to each cutting tool through pipe H, which travels the full length of the rocker arms and has lead tubes to each cutting tool.

The cutting fluid is circulated by a Brown & Sharpe pump, which is driven by belt from the clutch pulley (see Fig. 2). The main drive of the machine is through a friction clutch I, which connects directly to the main intermediate shaft, J, by two intermediate gears. The main spindle, as well as the upper and lower master-camshafts, is directly geared to the main intermediate shaft J by gear K on the upper master-camshaft and gear L on the lower master-camshaft. The gear driving the main spindle is inside the gear box. The main spindle and the upper and lower master-camshafts operate in unison. The gear box is of heavy construction, the spindle bearing and gears are of liberal proportions and the gears are constantly running in oil.

Fig. 3 shows the complete unit, consisting of rocker arms, tool block, cutting tool, upper and lower master-camshafts, gear sector and levers, in the relation which they bear to each other in the machine. The cut also shows the relative position of the cutting tool to the crankcheek being turned.

The center of the 6-in. overarm shafts on which the rocker arm swings is denoted by a, while b is the point of

the cutting tool at the center of the tool block. As the tool block is rotated to bring the tool to the proper cutting angle relative to the crankarm, the cutting tool point remains stationary. In Fig. 4 it will be seen that the tool block has gear teeth cut around the outer flange which mesh with gear sector d fulcrumed at e, thus bringing b and e into the same horizontal line. The purpose of this construction is to maintain the cutting tool at the proper cutting angle. This is done through the upper cam k, which is the cutting tool rotating or tool tilting cam, and is connected to the gear sector by lever g and link i fulcrumed on shaft h. The cutting tool is rotated through the fixed roller j on lever g which is raised and lowered as it travels in the track of the rotating cam k.

The form of the crank is obtained by swinging the rocker arm l, Fig. 3, which is controlled by roller m traveling in the track of the master cam n, which latter is generated from the form of the crankarm to be turned. Adjustments of the cutting tool for different diameters are obtained through a slide, o, at the bottom of the rocker arm to which roller m is attached. These adjustments are made by a screw, p, and locked by nut q. In Fig. 4 it will be noted that the tool block c carries a circular cutting tool b which is 3 in. in diameter and is held in position by a $\frac{7}{8}$ in. stud and nut. The adjustments of the cutting tool are obtained through a worm which is locked in the tool block and travels in the hobbled teeth in the cutting tool. A circular tool is used, because of its long life.

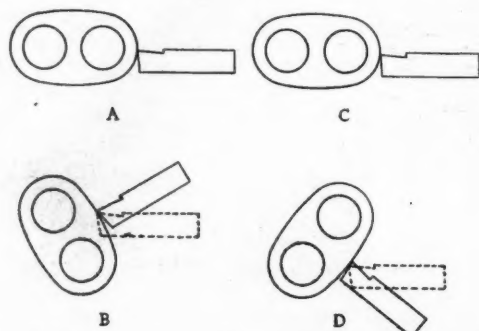


Fig. 5—Showing successive positions of cutting tool

A History of Vehicles

"THE WORLD ON WHEELS" is the title of a new book to be published soon by H. O. Duncan, the author, who has reviewed the progress of vehicles since the days of chariots to the present modern motor car.

Mr. Duncan has avoided technicalities in discussing the evolution of vehicular transportation, and has spent eight years in preparation of the volume. The automobile industry from its pioneer stages in all countries to its present position is reviewed.



The FORUM



Compression Temperatures

Editor, AUTOMOTIVE INDUSTRIES:

I would like to know about the rise in temperature of the combustible charge in a gasoline engine. Could you give me the formulæ for calculating the rise in temperature of the charge, commencing with the start of the compression stroke when it is about atmospheric temperature, through to the end of the compression stroke when it is about to be ignited—compression pressures of 60, 70 and 80 lb. per sq. in.? I want to familiarize myself with the comparison of rise of compression temperature with rise of compression pressure.

H. T. C.

The temperature of the gases during compression is given by the equation

$$T V^{\alpha-1} = \text{constant},$$

where $\alpha = 1.41$ for adiabatic compression, in which all the heat due to the compression is retained by the gases. Under the actual conditions of compression there is a loss of heat to the cylinder walls (which are cooled by water at less than 200 deg. Fahr.) especially during the latter part of the compression stroke, and α then has the value of 1.3, as determined by measurements on actual indicator diagrams. Hence, if we denote the absolute temperature at the beginning of the compression stroke by T_0 and that at any portion of the stroke by T_1 ; the volume of the compression space plus piston displacement by V_0 and that of the combustion chamber at the particular point of the stroke by V_1 , we have

$$T_0 V_0^{\alpha-1} = T_1 V_1^{\alpha-1}$$

$$T_0 V_0^{0.3} = T_1 V_1^{0.3}$$

As we can use any measures of volume we desire we will denote the volume of the compression space plus piston displacement (the cylinder volume at the beginning of compression) by unity, and the volume at the end of the stroke for a compression ratio of 4 to 1 is then $\frac{1}{4}$. Consequently we have

$$T_0 1^{0.3} = T_1 \left(\frac{1}{4}\right)^{0.3}$$

The temperature at the beginning of the compression stroke should be about equal to the dew point of a correctly proportioned fuel mixture at atmospheric pressure, which is about 95 deg. Fahr. for gasoline. That is, a 15 to 1 mixture of gasoline vapor and air is stable at all temperatures down to 95 deg. and no fuel will condense out as long as this or a higher temperature is maintained.

95 deg. Fahrenheit = 556 deg. abs.

Inserting this value in the above equation we get

$$556 \times 1^{0.3} = T_1 \times \left(\frac{1}{4}\right)^{0.3}$$

$$\log 556 + (0.3 \log 1) = \log T_1 + (0.3 \log \frac{1}{4})$$

$$2.74507 + 0 = \log T_1 + [0.3 (9.39794 - 10)]$$

$$2.74507 = \log T_1 - 0.18062$$

$$\log T_1 = 2.92569$$

$$T_1 = 846 \text{ deg. absolute} = 846 - 461 = 385 \text{ deg. Fahr.}$$

The temperature at any stage in the compression is

directly proportional to the initial temperature of the charge at the beginning of the compression, in absolute degrees.

It may seem that the figure of 95 deg. Fahr. for the initial temperature has been chosen too low, as thermometers inserted in the manifolds of modern engines usually show from 160 to 175 deg. Fahr. However, it is known that some fuel always enters the cylinders in the liquid state, and if the heat of vaporization of this fuel were subtracted from that of the gaseous portion of the charge, the temperature would be in the neighborhood of 100 degrees.—EDITOR.

Some Results of Careless Inspection

Editor, AUTOMOTIVE INDUSTRIES:

I have read with interest articles and letters in AUTOMOTIVE INDUSTRIES regarding the lack of finish and attention to details found on modern medium-priced cars, as now sent out by the manufacturers. My experience in this connection may be of interest. I have owned a number of cars since 1911 and since I always care for them myself, can make good comparisons. The faults found in the car referred to below came as a surprise on account of the good reputation and financial status of the maker.

This summer I purchased a new light six. This model now in the first year of production, is being accepted eagerly by the public due to the excellent results obtained during the past two or three years with other models of that make. The following faults developed during the first few hundred miles of running:

(a) Defective head light wiring. This wire, though armored, has not enough insulation between conductor and armor. Broken during installation. Grounds hard to locate.

(b) Generator trouble. New thermostat had to be installed before any good results could be obtained. At 3500 miles am again having trouble to get proper charging rate.

(c) Unsightly leakage of grease out of front wheel bearing. Had to put in hard grease to stop it.

(d) Both shackle pins on all four springs very loose sidewise, causing bad rattles. Not suspecting this in a new car was some time in locating the noises.

(e) About 1/32-in. fore and aft play in engine crankshaft. The longitudinal movement of this heavy weight at low speeds caused very annoying pounding noise.

(f) Faulty adjustment and installation of clutch throw-out fork and mechanism necessitating considerable attention on my part to eliminate noise.

(g) Leaky radiator shell.

(h) At 3500 miles, city driving, the upholstery is commencing to get out of shape at the driver's seat.

Practically all of the above can be laid to the lack of, or poor, inspection. I feel that, aside from the wiring, the material in the car is good throughout. Careless assembly and testing rather spoils the good impression which would otherwise go with a well-designed car.

I. H. HOOVER.

Export Combine Is Proposed

Central company would handle all foreign trade of N. A. C. C. members, but keen competition would result from forming of subsidiary companies or groups. Plan would relieve export managers of considerable detail.

ONE central export company, with thirty-three subsidiary groups comprising all manufacturers of passenger cars and motor trucks who are members of the National Automobile Chamber of Commerce, would be formed under the Webb-Pomerene law to handle all the foreign trade of these companies, according to the plan submitted to the N. A. C. C. export managers on Jan. 10 at their annual New York meeting. The central company or combine would perform all non-competitive functions, including the financing of shipments, whereas the subsidiary groups would be highly competitive in sales promotion work, each handling a low, medium and high priced line of passenger cars and a line of motor trucks.

This proposal was presented by George F. Bauer, chairman of the foreign trade committee of the Chamber, who has devoted much effort to finding a means by which the member companies might combine their efforts to foster and develop the use of automobiles outside of the United States. The plan, with its groups of manufacturers, was the outcome of his studies, which have shown him that co-operative effort, particularly so far as the financing of orders is concerned, is desirable if the automotive up-building of many territories is to be increased in a manner commensurate with the world-wide need for motor car and truck transportation and the intrinsic worth of the American made equipment.

Briefly, all of the 132 manufacturing companies of the N. A. C. C. are considered for membership in the combine. The main company, whose functions are entirely non-competitive, will be capitalized at \$500,000 of common stock and \$500,000 of the preferred stock, the latter of which, with interest at eight per cent, is to be offered to the public. The common stock will be held by the member companies, each of which must subscribe to it to the amount of \$2,000 (twenty shares) plus one additional share (valued at \$100) for each million dollar valuation of output in 1920.

The combine will finance all shipments. In addition, it will carry out such work as documentation, research, shipping, packing, stenographic and translation work, foreign educational campaigns, etc. Also, it will maintain representatives abroad, all of its work being commensurate with its strength as a representative of the majority of the American automobile producers.

The subsidiary groups will be engaged entirely in sales promotion work, competing, of course, with every other subsidiary group, each of which has one truck and three car lines. The manager or chief official of each subsidiary will have no work other than sales promotion in connection with his lines, as the routine duties of documentation, translation, etc., will be handled by the parent company. In this manner, Bauer believes that each export manager will be relieved of a vast amount of detail that now hampers him from sales development work.

The chief value of the plan is in the financing of shipments, a problem that now outweighs practically all others in building up foreign trade. Buyers in other countries are demanding satisfactory credit terms and the manu-

facturers, harassed as they are by the domestic situation, are unable to grant these.

The Bauer proposal plans the use of bank acceptances in its efforts to overcome this condition. The financing possible under such an arrangement multiplies many times the capitalization, thus giving the combine ability to handle a large volume of business. The financing would be executed as follows:

The manufacturer, on shipment in response to orders, draws at 90 days sight upon the combine for the value of the equipment. Shipment goes forward, with documents and drafts, title passing to the combine, when the draft is accepted by the combine's bank. This draft, of course, may be discounted at current rates and the manufacturer then has no more financial interest in the shipment, as the payment has passed to his account.

The transaction as it relates to the foreign buyer is most valuable. The buyer's home bank opens an "acceptance credit" covering the value of the shipment in the United States, in favor of the export combine. This credit should not be confused with a confirmed letter of credit which requires the foreign buyer to post his payment in advance in the United States. This is the method that has financed most automotive shipments in recent years and it is one that has occasioned much serious criticism from abroad. An acceptance credit does not require the advance posting of any money. The credit opened, the export combine, upon presentation of documents, draws a 60 day draft covering the shipment. This draft may be discontinued, if desired by the combine, but in any event the dealer has had two months credit after the time of shipment. Presuming that shipment requires 30 days, which is sufficient for most territories, he yet has another month in which to dispose of the cars or trucks before he is called upon to pay his local bank.

These points cover the main features of the proposed company and its subsidiary. The subsidiary, it is explained, is in no way curtailed by the combination in fostering sales abroad but it is given the added strength of backing by an export company sufficiently strong to carry it through all storms. The Webb-Pomerene law, it will be recalled, allows combination to competing firms in foreign trade which is denied to them in domestic business. The Bauer plan has taken full advantage of this provision but still retains the sales competition so necessary in selling automotive equipment.

Bauer has many automotive executives and export managers behind him in presenting the plan, the chief of whom is Walter E. Drake, of the Hupmobile company, chairman of the N. A. C. C. foreign trade committee and whose company has been one of the pioneers in the export field. Following its presentation to the export managers, the proposal will go before the chief executives of the industry. Several months must elapse before any definite action may be taken and the plan thus comes before the industry for discussion.

"The Webb-Pomerene law permits of concerted efforts in combinations for export trade, that, if attempted

domestically, would probably be considered illegal," Bauer stated. "It is comparatively new for the United States but in England, France, Belgium and Germany, such combinations have been effectively used in industrial combines for a large number of years.

"Since the law is fairly recent here, its usefulness to the automotive industry is not fully known as yet. A necessary purpose may be served in presenting a plan that is designed merely to aid in pointing the way for

such application. Its object is to show how N. A. C. C. members may, through combined efforts, obtain greater and better results in the development of foreign markets. Consolidation, whether the functions are included in the class of competitive or non-competitive, is possible and if carried out, will prevent considerable lost motion by manufacturers individually."

The proposal is such that any number of subsidiary companies may be formed.

A Headlamp Without Beam Modifying Lens

TO eliminate glare and comply with legislation enacted to this end, most motorists at the present time provide their headlamps with lenses in front of the reflectors, which either diffuse or else deflect the beam in a generally downward direction. Similar results can, of course, be obtained by using reflectors of special shape in place of the paraboloidal reflectors.

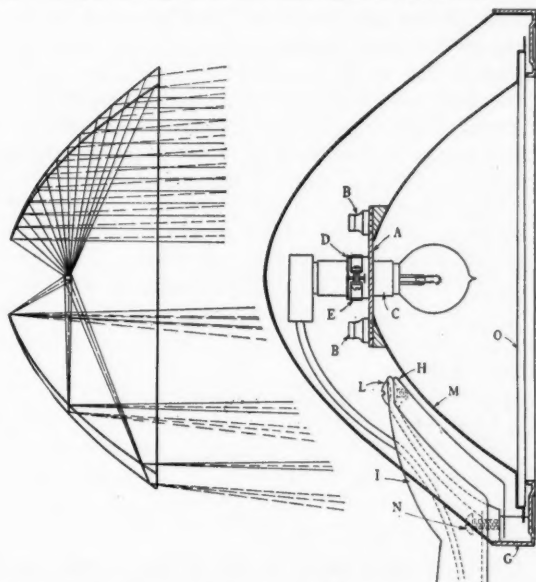


Fig. 1—Reflection of light rays from paraboloidal and hyperboloidal surfaces when emanating from a point source (above) and from a lamp filament. Fig. 2—(right) Focusing and aiming devices of Nolenz lamp

A new lamp placed on the market under the trade name of Nolenz by the Automotive Utilities Mfg. Corp. embodies the principle referred to above. The reflector is divided into six sectors which are arranged in pairs. Two of the reflector segments supply the strong road illumination—often referred to as the pick-up light—which is required directly in front of the car, striking the road at a distance ahead of 150 to 250 ft.; two supply illumination for the sides of the road where the light need not be so intense, and the other two illuminate the ditches still further out to the sides.

The "pick-up" light is obtained from the top and bottom sectors, which are of paraboloidal form and tend to confine the rays to a fairly narrow, conical beam of great intensity. The direction of this beam is accurately adjusted by means of a special aiming device with which the lamp is provided and which will be described further on. The two pairs of sectors on the sides are made of hyperboloidal form. The two paraboloidal sectors of the Nolenz reflector produce a conical beam of light of about 3 deg. diameter, while the two pairs of hyperboloidal sectors distribute the light evenly in bands about 8 deg. wide, extending from the central height point downwardly and outwardly at 60 deg. to the vertical.

The light distribution from the two parts of the reflector is illustrated in Fig. 1. The upper portion of the figure shows the rays as they would be distributed from a point source. The broken diverging lines show how the rays would diverge, and the solid lines show how the rays would be projected in parallel lines. The lower portion of the drawing shows the light rays as they are projected from the two surfaces with the lamp filament as a source.

An important feature in connection with any headlight is the means of aligning the source or bringing the filament center into the axis of the reflector. This is accomplished in the Nolenz, as shown in Fig. 2. The circular plate A may be moved both vertically and horizontally until the lamp filament is brought into the reflector axis, where it is locked by two thumbscrews B. The socket C may then be rotated or moved back and forth in the collar D until the center of the lamp filament is at the reflector focus, when it can be locked in position by the locking band E.

The aiming adjustment is made by means of a three-point bracket. The triangular shell F is rigidly secured to the reflector rim G. The socket joint H engages the upper end of the supporting member I where the two pivot. The set screws K are threaded into the triangular shell F with small spiral springs between the supporting member I and the triangular shell F. To aim the reflector, therefore, the set screws are manipulated until the beam is projected in the desired direction. The headlamp is then locked by tightening the set screw L, which is threaded into the supporting member. The reflector M is secured to the reflector rim G with set screws N, which also hold the glass O in place. The rear housing is removable for relamping, so that the focal adjustment may be easily accessible.

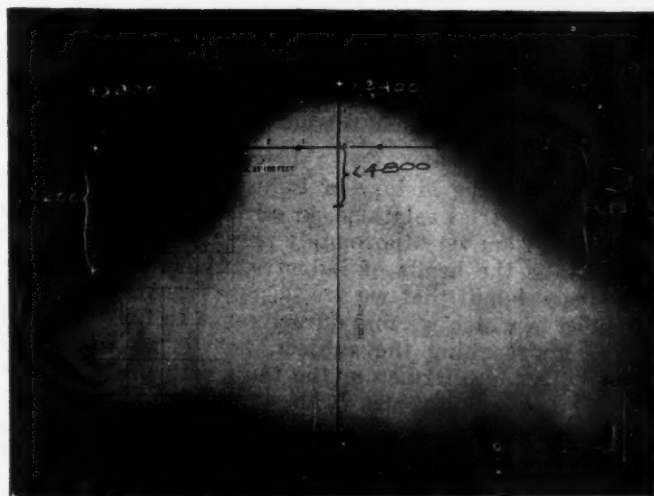


Fig. 3—Distribution of light from Nolenz lamp

Manufacturers Are Largely Responsible for Labor Troubles

Executive of International Harvester Co. recommends for industry the motto: "Physician, heal thyself." The views expressed here are specially interesting as coming from a man who has studied labor problems carefully from the management standpoint.

By H. F. Perkins*

I AM one of those men who firmly believe that conditions modify the approach to the question of industrial relations. There is no cut and dried panacea, no general plan that I have or would like to talk about. I recognize that the kinds and qualities of your industry must determine the kinds and qualities of your relation to your labor. Therefore, a general approach along the lines of principles seemed to me to be the more appropriate.

The relationship of management and men is, to my mind, the proper statement, and not the relation of capital and labor. Capital has no relation, as I see it, to men; it is the management that we are interested in discussing. Methods and policies are those of management.

What is the purpose of this subject we are discussing? Industrial relations is a common term to-day; it is in everybody's mouth. I take it that what we are after is peace in industry, and that—coupled with one other thing, efficiency in industry—is what we are aiming to accomplish. It seems to me that the two must go hand in hand. Peace in industry means simply lack of conflict that is destructive. It has nothing to do with the meeting of minds in the discussion of the problems. Those are essential and stimulating and valuable. Peace presupposes mutual understanding.

There can be no peace, as I see the history of things, except through mutual understanding or absolute domination. The period of absolute domination in management of countries and in the management of men, to my mind, has passed. Therefore, we must get back to the proposition of a mutual understanding and arriving at a mutuality of purpose and interest that will bind you together to a degree that will accomplish the purposes of efficient production.

As I study the history of industrial relations, or the lack of industrial relations, in our country and in other countries, I am very thoroughly persuaded that we might as well, as the heads of industry, as manufacturers or producers, admit that we are largely responsible for the troubles in which we find ourselves. I think it will help us, in approaching the subject, not to try to find the fault with our workmen or the fault with the attitude of the country—those men who express themselves, the public, those who create publicity—but to consider what we are responsible for, and how much the obligation lies upon us to correct that trouble.

*Vice-president International Harvester Co. Excerpts from a paper read before the annual meeting of the American Petroleum Institute.

It is to me beyond peradventure of discussion that the control which the labor unions have secured in this country in many lines of industry is not the fault of labor, is not the fault of the public, but is the fault of the manufacturers and the business men themselves.

The rapid and entrancing, captivating growth of industrial work in this country following the Civil War, and the great development that followed in Europe after the Napoleonic Wars have led to an absorption of business men in their money-making enterprises. The game has been so exciting, the proposition so great and captivating mentally and physically, that they went after it and forgot that they were dealing with men. We are now awake to the fact that a genuine problem is confronting us.

The trouble in industrial management in the past, as I see it, has been ignorant or domineering management. I want to stop just long enough to emphasize one matter that seems to me vital—that in our factories, in our workshops and in our mining and field enterprises we instill in the men a better quality of leadership.

I believe that much of the trouble that we find in our factories to-day is growing out of the fact that the foremen who have been in charge, until recently, have been men who were elevated to their positions from the ranks because they were good technical men or good "bosses" or compellers of output, rather than because they were leaders of men and intelligent students of the subject. Out of that unfortunate contact between men not properly introduced to the question of labor and management has come much of the bad feeling that has arisen on the part of the working men toward the control; no matter how splendid a character may be the head of your institution, no matter how kindly may be the spirit which controls the man in charge of your manufacturing operations or your producing operations, he cannot transmit that state of mind, he cannot transmit that spirit of friendly interest in his men through a crooked glass.

"Physician, heal thyself" is a good motto for industry to-day, and I am very anxious to leave that one thought if no more, that if we are going to approach the question of industrial relations intelligently and successfully, it will be after each one has taken himself and his organization in hand and figured out what he can do to make his relation to his men right and begin to study the problem from that angle rather than from the angle of complaint against the less educated, the less opportune, the less fortunately situated laboring man.

The growth of interest of the public is also a general principle which I think we must consider in this subject.

I understand that many of your concerns have done wonderful things in the way of labor regulations, but all of us are but touching the surface. What we want to do is to get the combination of forces which will in proper time and with proper study, slowly bring about the successful conclusion.

Investigation is essential and only organized investigation will get the goods.

In regard to the workmen themselves, I feel that we should always bear in mind this proposition: first, that they are men. They are very much like we are. Most of us started in that field—at least that is true in our industry—at the bottom. Most of the men at the top began in the shops or in the small work in the sales office and have worked their way through. I believe that is true of all industries. You would think on that very account that there would be a sympathetic understanding, but it does not follow.

Many people say that they believe the workmen want wages alone. I doubt that very much. The easy solution of this industrial relations problem of paying a man a good wage and letting him go is a very appealing one, because it is dead easy if you can afford to pay the wage. To my mind, however, it is unscientific, unintelligent and in the end will win nothing.

All men desire personal consideration; I believe that they desire to have an opportunity to express themselves, whether their expression finds itself responsible in the policy pursued or not; just as you with some of your growing young men will ask them a question on a matter of importance and see them respond with interest and give you their opinion and then perhaps you make a decision contrawise; you know that you have excited their interest, you know you have their thought turned in the direction in which you are working and that is equally true in the relation between management and men.

There has recently been in our midst a representative of manufacturing interests in England, Mr. Rountree,

and the other day he made this remark: "Capital and labor must co-operate before either can become effective, but I look upon it as unreasonable that in matters affecting my daily life and the conditions under which I work, capital shall always be master and I the unquestioning servant. I acknowledge that in industrial enterprise there must be some one in supreme control and there must be true discipline, but this does not preclude an arrangement under which working conditions are mutually agreed upon instead of being dictated by the representative of capital alone."

I believe there is a principle which we must consider. How to apply it you must work out. First, remember that any man likes to have a chance to find an expression of his thought through himself or some representative, and second, that every man will respond to fair play to such a degree that you can dismiss the other element that does not.

If they do not get an opportunity in the years that are following to express themselves through representation or individually, I am sure they are going to call for professional help, because the size of our organization is making it more and more necessary that there shall be a new point of contact either through hired professional assistants or through direct representation of the men themselves in contact with their management.

In my judgment the average working man would much prefer to deal with his own master rather than with an outside man. I cannot see any indications that the average workman likes to work through a union delegate. It seems to me as an easy preliminary to the question of approach to this matter, that we may assume that, with proper attitude expressed in an organized way between management and men, the men will prefer to work along that line rather than with the methods which are now their only resource.

I want to leave just the final thought that for each of you it is an independent proposition. I am not one of those who believe that any successful concern working in industrial relations for two or three years can tell any other concern that they should go and do likewise. I am sure each enterprise will work out its own problem in its own way.

Official Report on Bournonville Double Transcontinental Trip

ON October 14, last, Eugene Bournonville and his son, Rene, started from Columbus Circle, New York City, in a car fitted with a Bournonville rotary valve engine for a trip to Los Angeles and return, under observation of the valve mechanism by the American Automobile Association. No representative of the A. A. A. accompanied the car, but previous to the start of the tour seals were applied to the front and rear cover plates of the valve chest, a special form of wire seal being used which made it impossible to remove the valves from the cylinder head without breaking at least one of the seals.

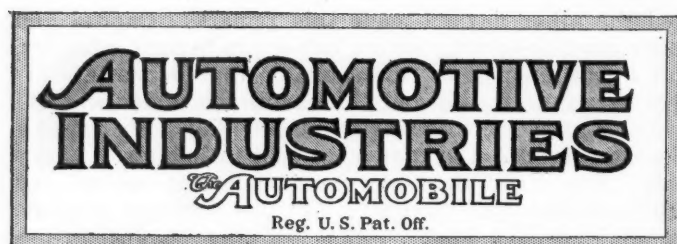
The car returned to New York on November 15, where it was met by A. A. A. representatives. An inspection of the motor was made at the Bournonville plant the following day. Both seals were found to be intact, which proved to the A. A. A. officials that no access had been had to the rotary valve throughout the trip of 6000 miles. After the seals had been broken the two sections of the valves were removed from the engine and micrometered as before. The results of the measurements before and after the trip are given in the following table, from which it can be figured that the

clearance of the valve in its sleeve is only 0.0017 to 0.0019 in. The figures show that the wear of the valve was exceedingly small, the report concludes.

Valve Measurements—Bournonville Rotary Valve Engine

	(Valves Cold)	
	Before Start of Trip, Oct. 13, 1921	After Trip, Nov. 16, 1921
<i>Front Valve</i>		
Front	3.7510 in.	3.7507 in.
Center	3.7511 in.	3.7510 in.
Rear	3.7511 in.	3.7509 in.
<i>Rear Valve</i>		
Front	3.7498 in.	3.7498 in.
Center	3.7499 in.	3.7498 in.
Rear	3.7498 in.	3.7497 in.
<i>Valve Sleeve</i>		
Front	3.7527 in.	
Center	3.7528 in.	
Rear	3.7517 in.	

EXPERIMENTS were made in England recently with an amphibious tank, which, however, ended in an accident. In the course of the trial a crossing of the Thames was attempted. Leaving the Charlton Tank Experimental station in the morning the tank arrived at Cross Ness and was driven into the water when the tide was at a favorable height. She had traveled about 300 yd. from shore when, from some cause unknown, she sank. The tank is to be raised for examination.



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Automotive Industries—The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly), May, 1902, Dealer and Repairman (monthly), October, 1903, and the Automobile Magazine (monthly) July, 1907.

Effective Car Advertising

NO class of advertising has been more replete with exaggerations and superlatives than has that which pertains to automobiles. The unsoundness of such publicity effort from the standpoint of sales is becoming more generally recognized throughout the industry, but a lack of definite facts still characterizes much car advertising. The buying public is becoming more familiar with automobiles each year, and as a result there is an increasing necessity for facts and really informative data in publicity designed to promote sales.

It would be an excellent thing for the industry if every automobile advertisement could have the same honor which was recently accorded to one put out by a prominent car maker. The ad "Over 600,000 Owners," which has become rather familiar during recent months, was used by a Chicago pastor as a text for a sermon a few weeks ago. Standing out prominently on one side of the platform was the full-page advertisement bearing the simple fact message just

given. On the opposite side of the pulpit, on another placard, stood a color advertisement brilliantly illustrated and splendidly worded.

The sermon was a special one to children and the pastor emphasized that "we should be known by our deeds even more than by our words." The two advertisements served to illustrate the text. Would that more automobile advertising might be suitable as texts for similar sermons.

Over-specialization in Production

SPECIALIZATION in production processes has been carried to a point where it may make for inefficiency rather than for efficiency, thus defeating its own end. A failure to utilize all of the productive qualities in each worker is just as much inefficiency as to cut up material so that a maximum of waste results.

Efficiency engineers have propagated so thoroughly the idea that maximum efficiency lies in maximum specialization that modern industry is in grave danger of going too far in that direction. The manager may say "So long as that worker puts more pieces per hour through the machine than anyone else, I don't care what else he knows or thinks." Such management is not sound from an economic viewpoint.

To begin with, the period over which that worker will be able to do that single thing at the maximum rate in this particular place will be governed to some extent by his mental attitude toward his work, his employer and his environment. Even from the limited viewpoint of quantity production, it is not sound management to consider the production volume of the worker as the only contact with the employer.

In a wider sense, however, the loss to management is greater. If a man has the ability to think or to make constructive suggestions, it is poor economy to permit him to exercise only his capacity for pushing metal into a machine. Even though his mental capacity be limited, the employer is not getting maximum efficiency from the worker until that mental capacity, whatever it may be, is given the opportunity to function to the fullest possible extent.

It is not enough that the management simply be willing to listen to suggestions: it is necessary that constructive thinking on the part of employees be definitely encouraged. This must be done, not only by encouraging the men to make suggestions concerning the plant operations, but also by a definite attempt to make the conditions of the job such as to permit and encourage mental development of themselves. Complete specialization tends to remove responsibility from the individual and, consequently, to discourage mental development. It is only through the development of individual responsibility, however, and through the development of individual intelligence that management can hope ultimately to make definite progress. The necessary direction of growth is clear; the exact path must be found. Some plants have already started on the right road and are reaping the benefits which grow by the wayside.

Selling the Price Cuts

THE expected number of price cuts in all classes have taken place during the New York show. It may be assumed that the purpose of these additional cuts is to stimulate sales. In a general economic sense it is true, of course, that a lower price automatically widens the potential market, but it does not necessarily follow that every unit of a series of close-following reductions will result in immediately increased sales.

Many automobile salesmanagers stated emphatically and published broadcast that "rock-bottom" prices had been reached when the first flurry of price cuts came over a year ago. This statement has been reiterated with each succeeding reduction since that time. Conditions in the material and labor market have justified certain reductions since that first cut, but, particularly in recent months, there has been no decided change in basic economic conditions that would necessarily be reflected in another cut.

Consequently the public may assume that previous cuts were not particularly scientific reductions based upon costs plus a certain profit; that present statements concerning "rock bottom" may not be true because previous statements to that effect proved subject to considerable modification. The time has come when price reductions themselves must be sold to the dealer and to the prospective owner.

The dealer is beginning to ask merchandising reasons for cuts. It is difficult for him to get much selling value out of the "rock-bottom" argument. He knows that that price is only one consideration among many in buying and selling an automobile, but constant price cuts serve to emphasize this single factor in the minds of buyers. Thus the dealer is called upon to sell very largely upon that basis at the present time. In many cases he is at a loss to know just what the real basis of reductions has been.

The dealer who must present the car to the public must be sold on the reasons for the latest reduction, the basis upon which it was made, and its relation to a proper stabilization of values in the automotive industry. Car prices must fluctuate to a certain extent in conformity with economic and business conditions, but such fluctuation does not call for a constant readjustment every few months.

Recent price cuts have had comparatively little effect upon the cash value of a car sale. A large proportion of prospective new car customers are already car owners. While the first-time buyer benefits by price reductions, the man with a car to trade does so to a very limited extent, if at all. As the new car price is lowered, used car values depreciate in proportion. Thus the actual cash payment for new cars tends to become uniform, regardless of the price of the new car.

The replacement market is constantly becoming a larger proportion of the total car market, and used car owners are rapidly coming to recognize that price reductions have little effect upon the cost of a new car to them. Commenting on the numerous price drops at the show, a man who now owns a car and desires to get a new one was even heard to remark, "These price cuts are all right, but they don't mean anything to the man who wants to trade."

A fair price, based upon costs and service value, is always necessary, but given that as a basis, price is only one of many other important factors in selling an automobile. Nothing could be more demoralizing to the industry than a price war. Even the strongest are weakened by such a process, and the industry as a whole cannot benefit.

The present price cuts must be "sold" if they are to accomplish their purpose of stimulating sales. There is an urgent necessity for an immediate stabilization of car prices on the basis of the most accurate cost and selling data available.

Display Clears Air for Industry

Price Uncertainty Is Met by Makers

New Era of Keenest Competition
in Same Typed Cars
Forecast

By James Dalton

NEW YORK, Jan. 11—Atmospheric conditions in the automotive industry have been materially cleared by the New York show. The uncertainty in regard to prices which has existed for the past few weeks has been dissipated. Reductions have been more general than was expected in the lower priced lines and less general than was expected in the higher priced cars.

The result will be tremendously keen competition by manufacturers of the same type of cars which are on practically the same price level. This fight will be keenest among the largest producers. Business rivalry will be all the sharper because of the general expectation that sales in the coming year will be little larger than in 1921. It is felt that just as many cars will be sold but that they will be made by a smaller number of manufacturers.

Buyers Given New Values

Values given purchasers at the show never have been greater than this year. Refinements in models have been made and better materials used. This has been made possible by the reduction of inventories and the writing off of losses which have permitted makers to go into the market for materials and buy them at current prices.

Scarcely a manufacturer can be found who will not be in the market in the near future for supplies of various kinds, although they will not buy in large quantities. This will result in better business for parts and accessory manufacturers. The inventory situation is so much better than it was at the beginning of 1921 that there is no comparison. Few companies have any serious worries on this score.

One of the striking trends of the show is toward lighter models and another is toward lower prices for enclosed models. One company announced a slash of \$700 on its coupe and sedan. Other price cuts show the same general tendency.

No especially sensational mechanical announcements have been made at the show. Probably the most inter-

REVEL OF PESSIMIST OVER, FRANKLIN SAYS

SYRACUSE, Jan. 9—Commenting on the outlook for 1922, H. H. Franklin, president of the Franklin Automobile Co., says:

The business outlook for the coming year is encouraging.

One feels like getting into the fight.

All business signs point ahead.

Each month should see a gain in general conditions. The entire world will move forward slowly.

The revel of the pessimist is about over.

esting is the Franklin four-cylinder, which will sell for less than half the present model. There is added interest in this car because the General Motors Corp. will bring out four and six-cylinder air-cooled models in the early fall.

The competition for capable dealers who are good merchandisers is becoming very sharp, and this is one of the subjects which is occupying the minds of the many manufacturers attending the show. Most of them are disposed to back up their dealers to a greater extent than ever before. Few are offering increased discounts, but many are making changes in their contracts designed to please dealers and distributors.

Opens as Buying Show

Early indications are that the exposition will be a "buying show." It is certain that more retail sales will be made than was the case last year. It is significant, however, that prospective purchasers are "shopping" carefully and are determined to get the best value for their money.

The big, outstanding fact of the show, however, is that prices probably have been stabilized for months to come on the more popular lines.

Coincident with the opening of the show comes the completion by AUTOMOTIVE INDUSTRIES of its annual tabulation of the registration of motor vehicles in the United States. The total for 1921 was 10,449,785, an increase of 1,517,327 over 1920. This increase was larger than the gain for 1920 over 1919, which was 1,335,995. The difference probably is accounted for by the fact that nearly all manufacturers entered 1921 with large stocks on hand.

No False Optimism Manifested at Show

Majority of Manufacturers Expect
Production to Be on
1921 Basis

NEW YORK, Jan. 9—No evidence of false optimism is to be found among automobile manufacturers who are here for the New York show. They have no illusions about what the coming year has in store for them. A few expect sales of passenger cars in 1922 to exceed those of 1921 by about 25 per cent, but the majority believe production this year will be on about the same basis as last year.

See Centralization of Output

While it is the consensus of opinion that there will be no falling off from the production of 1,535,000 passenger cars in 1921, there are many factory executives who believe this output will be centralized in a few factories to a greater extent than it was last year. There is no disposition to wink at the fact that competition will be keener than it ever has been, especially in lines which are in practically the same price class. It is felt that if there are further price concessions it will be by rival companies fighting for sales of cars.

Those companies which have developed an export trade report a somewhat larger volume of actual sales and many more inquiries than have been apparent for several months. They are confident that as the year advances their foreign trade will steadily increase.

Generally speaking, manufacturers feel that there can be no marked revival of buying until the position of the farmer is materially improved. They point out that a large part of the sales of 1921 were made in a comparatively few cities and that it will be necessary to carry on intensive sales campaigns not only in those cities but in a new territory in the coming year if the sales mark of 1921 is to be equalled.

Schedules Purely Tentative

Production schedules for 1922 thus far are purely tentative and all estimates merely are guesses. All manufacturers as a whole will build cars strictly on a sales basis and will permit no large accumulation of unsold vehicles. They will be able to tell more definitely in a few weeks what their output for the year is likely to be.

While there is still some hesitancy on the part of bankers in financing sales, manufacturers sense an easing up in the situation.

Show Sees Wave of Price Reductions

48 Manufacturers Announce Changes

Automobiles in Medium Cost Class Bear Brunt of Revisions

NEW YORK, Jan. 9.—Price readjustments are of paramount importance in the merchandising plans of the car manufacturers and the belief of the public that the exhibition would be ushered in with a wave of price revisions was well founded. The opening days of the show are bringing with them announcements that embrace many lines.

Manufacturers whose prices were lowered at the show are Reo, Lexington, Studebaker, Velie, Milburn electric, Peerless on its open models, Cleveland, Gardner on its sedan, Chandler on its new line, Paterson, Noma, Sayers, Standard, Grant, Maibohm, Crow-Elkhart, duPont, Kissel, Earl, Premier, Elcar, Stephens, Auburn and Detroit Electric. Oakland announced a slight revision upward on three of its models, the touring and sport remaining unchanged.

Other Changes Made Earlier

These price changes follow many others during the last few weeks, all of which were announced sufficiently early so that the public had ample time to become acquainted with them before the doors of the annual show swung open. These early changes were on the Cadillac, Hudson, Buick, Essex, Stearns, Oldsmobile, Saxon, R & V Knight, Paige, Apperson, Stutz, Nash, Haynes, Marmon, Hanson, Handley-Knight, Elgin, Stephens and Lafayette lines and an increase on the Davis.

Dodge Brothers, whose line has been the subject of persistent rumors, announced that it would reduce its prices on Feb. 1, effective Jan. 1, though what the reductions would be was not stated. Advertising Manager G. H. Phelps formally denied the report current at the show that Dodge would set a new figure of \$775 or \$785 and the Dodge salesmen are continuing to quote a factory price of \$985 on the touring car.

Meets Buick Prices

Studebaker, Cleveland and Chandler were also the subject of much speculation as the show opened, as these lines are among those offering stiffest competition to the Buick, which is entering the new year with its second decline from the top price of 1920. Studebaker met

CARS ON WHICH PRICE REVISIONS ARE MADE

Apperson	Gardner	Oldsmobile
Auburn	Grant	Paige
Buick	Handley-	Paterson
Cadillac	Knight	Peerless
Chandler	Hanson	Premier
Cleveland	Haynes	R. & V.
Crow-	Hudson	Knight
Elkhart	Hupmobile	Reo
Davis	Kissel	Sayers
Detroit	Lafayette	Saxon
Electric	Lexington	Standard
Dodge	Liberty	Stearns
DuPont	Maibohm	Stephens
Earl	Marmon	Stutz
Elcar	Milburn	Studebaker
Elgin	Nash	Velie
Essex	Noma	Wills Ste.
Ferris	Oakland	Claire

the Buick price by naming \$1,045 on its redesigned light six, \$1,475 on the special six and \$1,785 on the big six, these representing reductions of \$105, \$160 and \$200 respectively. Cleveland dropped \$100 on the touring car, bringing it to \$1,195 and Chandler, showing for the first time a five passenger touring car, set a price on it of \$1,595, which compares with \$1,785 as the old price on the two and seven passenger touring models. Cleveland made its best bid for prominence in price cutting by bringing its sedan down \$700 to a new price of \$1,595.

Medium Price Class Affected

The medium price class bore the brunt of the changes and the lines selling in the neighborhood of \$1,500 show the results of the competition that has set in. Velie dropped from \$1,585 to \$1,395, thus coinciding to a penny with Buick. Reo brought its touring car down to \$1,595 and several others in the same class show by their revisions that they are fully awake to the merchandising situation created by the present tendency to get rock bottom prices.

The new Rickenbacker car, on which production already has started and which perhaps is destined to play its part in the automotive world, came out with a list that fixes its touring car at \$1,485, its sedan at \$1,985 and its coupé at \$1,885. The first announcements of the Rickenbacker stated that its touring car

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ELGIN INCREASES OUTPUT

ARGO, ILL., Jan. 7.—Elgin factory sales for the first six days in January show an increase of 22 per cent over the sales for the entire month of December. C. L. Alexander, sales promotion manager for the Elgin Motor Car Corp., says that his entire distributor and dealer organization shows a more optimistic spirit than at any time during the past six months. January, he says, will show more business than any similar period during the past four months.

Inventory Situation Is Vastly Improved

Bears No Comparison With Year Ago—Responsible for Price Revisions

NEW YORK, Jan. 9.—The position of passenger car manufacturing companies in relation to inventories at the opening of the show this year is so much improved over the serious plight they were in at the beginning of 1921 that there is no comparison. Almost without exception factory executives assert that inventories have been liquidated and losses taken. These assertions should be discounted to a certain extent but it unquestionably is true that most companies have little to worry about so far as inventories are concerned at this time.

There is scarcely a company in the field which is not in the market for small supplies, at least, of parts and materials. These orders will increase as production is enlarged. After a review of the situation at the show it can be stated safely that the improved position of manufacturers will be reflected from now on in the business of parts and accessory makers.

Revisions Due to Inventories

Many of the factory executives seen at the show declared that price revisions had been made possible by the fact that old and high priced inventories had been cleaned out. Ability to purchase materials at the market has resulted in a scaling down of prices.

When the show opened last year manufacturers were hopeful that they would be able to work off their high cost inventories without material loss to themselves, but after sales had been at a standstill for three months they changed their minds and began taking their losses. This process of liquidation now has been virtually completed.

Must Replenish Stocks

The inventory taking period is practically over and nearly all companies now know exactly where they are at in respect to stocks of supplies. They will take steps immediately to replenish those parts of which they are short. Except in the cases of the larger production concerns buying will continue to be on a hand to mouth basis but it will be for current needs.

There is evident determination on all sides to avoid loading up with large inventories which has proved so disastrous in the past year and a half.

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Makers Competing for Ablest Dealers

Not Enough to Go Around in Building Strong Sales Force

NEW YORK, Jan. 9.—There have been few shows in the history of automobile expositions in which the manufacturers are more keenly interested in dealers than at the one now in progress at the Grand Central Palace. Competition for successful dealers is almost as keen as for sales. It is realized that the one question is closely related to the other and that the company with a strong sales organization will be the one which will get the business.

Factory sales managers at the show are greeting cordially all the dealers with whom they come in contact and inviting them to pay visits to hotel headquarters where contracts are scanned and the general merits of the factory proposition are considered.

Merchandising Being Developed

Almost without exception manufacturers admit that they are anxious to make large additions to their dealer organizations. They state frankly there are not enough good dealers to go 'round and that real automotive merchandisers must be developed to meet the demand.

Factories generally are giving greater consideration than ever to the need for teaching modern merchandising. The most popular method of doing this is by sending factory representatives into the field as district men. Hundreds of these salesmen have been added in the past few weeks and many more are in prospect.

Representatives of a few companies admit that they propose gradually to eliminate distributors but the preponderance of sentiment seems to be for the retention of the automobile middleman. The manufacturers who are sold on the distributor, as a general rule, are not those with the largest production but it has become evident that there will be automobile distributors in the business for a long time to come.

Dealer Financing Easier

Most companies are having their distributors call frequent luncheon or dinner meetings of their dealers which are addressed by factory men. These meetings are used to preach the gospel of "buying them right," in relation to used cars. It now is conceded that there is no panacea for the used car evil and that the only way in which it can be solved is by eliminating losses on trade-ins.

The question of dealer financing is not nearly so serious as it was a year ago but many companies are arranging for the accommodation of their dealers through financing companies. Most of the manufacturers who are sold on the distributor contend that a large proportion of the dealers are unable to finance themselves except for purchase of two

or three cars at a time through distributors.

There is apparently a disposition to adopt in dealer contracts the suggestions made by the directors of the National Automobile Chamber of Commerce after a series of conferences with a committee representing the National Automobile Dealers' Association.

Hupp, which now has 1250 dealers and 90 distributors, expects to increase its dealer organization to 1400, but does not believe it could add profitably more than ten distributors. Marmon is making an effort to materially enlarge its dealer organization.

Some Branches to Be Established

The new Fox air-cooled car will be handled entirely through distributors. The Frontenac sales policy has not been definitely determined. The Gray has selected distributors in Boston, New York, Philadelphia, St. Louis and several other large cities.

Rotary (Bourbonville), a quality job, plans to sell only directly from the factory and will place no dealers or distributors. This car, however, is made largely to introduce the Bourbonville Rotary Valve and Bourbonville admitted that he expected to build very few cars. Kelsey, just going into production, will place no distributors, but will deal through branch houses. Sayers looks with favor upon the establishment of branch houses but is taking no definite steps along this line as yet. Anderson also plans taking a step of some sort in this connection, but would make no definite announcement. It was said, however, that some distributors would probably be eliminated to make room for branch houses.

Trend Is Toward Distributors

The strongest sentiment, however, was expressed in the opposite direction. Dupont will probably do away with some of its branch houses and place its car in the hands of distributors. The Stanley Steamer will probably do the same thing. Rickenbacker will have no branch houses but will deal through distributors. Norma is looking for new distributors and dealers, as are Hanson and Hatfield. Itala, a foreign car, may also add new distributors in this country. Leach Biltwell, a California firm, plans an invasion of middle western and eastern territory, but has not yet decided whether it will deal through distributors or establish branches in New York and Chicago. The latter course will probably be followed if satisfactory men can be found.

While Dorris has opened a factory branch in Philadelphia it is not an indication that the company is adopting a policy of distributorship elimination. To the contrary it is building up a strong distributor organization.

Pilot is leaning toward the factory branch policy with six branches already opened and four more, at Pittsburgh, Philadelphia, Boston and Cleveland, under contemplation. Under the company's policy a few distributors will be retained but they will be those that have proved strongest in the organization.

See Greater Output from Export Trade

Manufacturers Expect Foreign Business to Surpass That of Last Year

NEW YORK, Jan. 9.—Export activities by many of the exhibiting companies were a marked feature of their merchandising plans for the show. Foreign sales managers of many of the companies, or representatives of that department, were on hand at the displays, with the expectancy that 1922 would show a much larger volume of overseas shipments than 1921. In fact, many makers are counting upon such business to aid them in increasing their schedules and it was apparent that many companies had awakened to the possibilities in such trading.

Unsold Stocks Cleaned Up

Officials reported generally that recent weeks had brought about a change in the stagnant condition of foreign trade and that inquiries and orders were being received in a manner that warranted greater optimism for the coming months. Stocks of unsold cars in the hands of distributors in other countries or in the customs warehouses have practically been cleared up, thus assuring an entirely different situation than confronted the trade at the last show. Then, large numbers of cars were unsold in the hands of dealers but, in the meantime, these have been worked off and new buying to meet the current demand has set in.

The recent improvement of the exchange situation, which now affects many countries, has greatly heartened the export managers, who obtained prospective purchasers on the first day of the show. Several commission houses at New York are reported to be seeking automotive connections but a number of sales officials declared that they intended to keep the lines in their own control. The opening of export offices or the appointment of export officials will be announced by several companies during the show and it is reported that a number of dealers and distributors from other countries have come to New York to take on new lines.

Delay Action on Senate Reimportation Measure

WASHINGTON, Jan. 9.—On request of Senator Curtis of Kansas, the Joint Resolution imposing a duty of 90 per cent on all goods exported from the United States for the use of the American Expeditionary Forces and its allied forces which have been sold to any foreign government or person when reimported to this country, was passed over in the Senate to-day.

This bill is known as the Graham resolution and was prepared in response to protests from American automobile dealers and manufacturers.

Hupp Has 30,000 Output Schedule

**Will Double Production of 1921
—Changes in Price of Closed
Cars Only**

NEW YORK, Jan. 9.—The Hupp Motor Car Corp. has entered 1922 with a tentative production schedule of 30,000 cars, which would be double the production of last year. The price of the coupé has been reduced from \$2,100 to \$1,835 and on the sedan from \$2,150 to \$1,935. Open model prices remained unchanged. The main factory of the company in Detroit has been enlarged and many improvements have been made in the branch plants which include the Detroit Auto Specialty Co., the American Gear & Mfg. Co. at Jackson, and the H. & M. Body Co. at Racine.

To Increase Dealers

A. C. Hutchinson, general sales manager, who is here for the New York show, announces that the dealer organization, which now numbers 1250 and 90 distributors, will be increased to 1400 dealers. A scientific analysis of automobile registration in every county in the United States compared with Hupp sales in each county, has been made by Hutchinson and the allotments to dealers are based on this analysis. This has inspired a feeling of confidence within the dealer organization that no favorites will be played and that every man will be treated with absolute fairness. This spirit was reflected in a resolution adopted by the dealers at their recent convention in which appreciation of the company's policy was expressed.

Domestic sales of the Hupp company in 1921 are said by Hutchinson to have been 92½ per cent of the domestic sales for 1920, which was the biggest year the company ever had. There was a sharp falling off in export sales last year, however, and they reached only 5 per cent of the 1920 total. The tone of the export market is steadily improving and a large increase in foreign sales is expected this year. Hupp has sixty-five foreign distributors.

Heavy Program Planned by Cleveland Factories

CLEVELAND, Jan. 9.—The thirteen automobile factories here have scheduled for the present production figures that will run the total thousands of cars in excess of the number turned out in the year just ended. Practically all of the companies plan to augment their working forces, while some in recent weeks have taken on employees.

Grant will build approximately 7000 cars in the new year, says George C. Hubbs, vice-president and general manager. This organization by Feb. 1 will have more than 100 direct sales connections.

Templar did not allow the recent fire

to halt production and it plans to build 5000 cars. M. F. Bramley, president, says that 500 additional workmen will be employed during the early spring months. J. H. Bramley, son of the president, is acting factory manager, succeeding D. L. Britton, resigned.

Winton is busy on plans for a larger year than 1921. H. J. C. Miller, sales chief, says. The factory organization has been changed, the overhead has been cut down and new materials and supplies are now arriving at the plant.

Chandler plans include an intensive development campaign in all directions. The company expects to employ its full quota of workmen early this year.

Plans are under way to lift the receivership of the Ferris car, which has been in effect since summer.

The Kurtz Automatic is to turn out 600 cars in 1922. This is the city's newest automobile plant. The factory has been operating during 1921 on a car a day basis. The new Marsh factory that has been in course of construction is expected to get into production on a light four early this year.

Gray Expects to Produce 23,000 Cars During Year

NEW YORK, Jan. 9.—Gray Motor Corp. will build 23,000 of its new light four-cylinder cars in 1922 and has already contracted with dealers to take over this number. These for the most part will be built and assembled in the Detroit factory. With the establishment of its assembly branches throughout the country the company will go into production on a basis of 200,000 cars a year.

This statement was made at the Gray Motor exhibit in the Hotel Commodore by Frank L. Klingensmith, president of the company, and former executive vice-president of the Ford Motor Co. Twelve assembly stations will be located this year, the cities thus far tentatively settled upon being New York, Philadelphia, Boston, Detroit, Chicago, Minneapolis, San Francisco, Kansas City, Dallas, Atlanta, Columbus and Portland, Ore.

Production Is Resumed on Milburn Electric Truck

NEW YORK, Jan. 9.—The Milburn Wagon Co. has resumed production of electric trucks which was suspended in 1917. It is producing the chassis for ½-ton and 1-ton models.

A complete line of bodies will be provided and purchasers will be given their option on a complete line of batteries. Persons to whom the trucks are sold will be supplied with the battery best fitted to their needs. In order to study these questions and give expert advice to fleet owners and individual purchasers, the company has engaged the services of W. L. Lindsell of Detroit, a transportation engineer.

Sales of the delivery wagons will be handled by the Milburn passenger car dealers and others who will be added to the organization from time to time.

Ford Reopens Plant With 40,000 Workers

**If Car Demand Falls, Company
Will Keep Busy Making
Parts**

DETROIT, Jan. 9.—Ford Motor Co. resumed operations to-day on a basis approximating full capacity of the Highland Park plant, 40,000 men being employed working in shifts under which 32,000 are employed at one time. This compares closely to the number employed by the company through 1921.

Though a statement has been issued by Edsel Ford, president of the company, that the company looks for a volume of business aggregating that of 1921, it is considered likely that the company is prepared to keep its factory busy in the manufacture of parts for cars already in the hands of owners, as manifested by its recent change in parts sales policy, if sales of cars fall off.

Officials have declared that if the company were to get but a small fraction of the parts replacement business now going to independent manufacturers, it would mean a very large addition to the output of the plant. Fortified with a heavy demand for parts, the company would not have to depend so largely upon the sale of new cars to keep the plant in 100 per cent operation.

Hanson Detroit Factory Depends on Show Results

NEW YORK, Jan. 9.—Location by the Hanson Motor Car Co. of a plant in Detroit for the manufacture of its new light six line and the former Hanson line is held in abeyance pending the results obtained from the New York and Chicago shows. Until such time as the capacity of the Atlanta plant is exceeded, all manufacturing will continue to be carried on there.

Much dealer attention was given the light six, which at \$995 is the only car in its class below \$1,000, at the opening day of the show. With this vehicle the company hopes to open the channels of national distribution to Hanson products. When the company is ready to go into production on this model, officials declare, it will be equipped with the new light six Continental engine.

Factories in Syracuse Operate at Full Blast

SYRACUSE, Jan. 9.—Automotive manufacturing, which suffered keenly here during the readjustment period, is now coming rapidly into its own again. Plants like the Brown-Lipe-Chapin Co. and the New Process Gear Corp., in particular, are running full blast filling large orders for complete vehicle manufacturers.

The stimulation of the automotive and other industrial plants in the city is rebuilding the retail market here.

48 Manufacturers Make Price Change

Automobiles in Medium Price Class Bear Brunt of Revisions

(Continued from page 87)

would fall below \$1,500 and its sedan under \$2,000. These figures are barely shaded.

Two other cars concerning which there had been speculation were the Gray, which F. L. Klingensmith, former Ford official is to build in the Gray plant at Detroit, and the new Hanson six, which had been advertised to be the lowest-priced six made in America. The Gray was exhibited in one of the hotels, with a price announcement reading that it would list below \$500. It was said, however that the touring model would sell for \$475.

Only two models of the car will be built this year, touring and sedan. Next year it will include a complete line. The work of dealer organization is progressing rapidly but in no case yet has the company permitted any contracts to be signed.

Much Speculation Rife

The opening day of the show was surcharged with speculation about prices. Manufacturers and their representatives seemed to realize that a great part of their hopes for a successful year were tied up in the necessity of reaching a price stability that would prove to the public that further cuts were not in the offing. The public has grown weary with its rumors that tomorrow or the day after would see such and such a car brought down materially and consequently it was interpreted as watching the present exposition with a great deal of expectancy. From a merchandising standpoint, the public demand for lower figures had to be met and, fortunately in many cases, a cut was justified by the better position in regard to inventories, parts, labor, etc.

Aim at Minimum Figure

Factory executives, generally, seem to be thoroughly awake to this situation and, although many of them stated that they are making cuts now in advance of lowered production costs, they nevertheless are keen to prove that they had come down to a minimum figure. Some executives expressed themselves as being so thoroughly sold on the fact that the minimum had been reached that they speculated as to what the buyers would do on a rising market, provided manufacturers should raise prices in the spring or early summer. But this sort of talk was not frequent; officials rather took the standpoint that they had announced the 1922 prices and that they expected the present figure to carry them through the year. The doctrine that prices must be stabilized has been well understood and, while there are too

many complexities in the merchandising and manufacturing fields to assure that the lowest prices have been announced, there was everywhere the feeling that the 1922 models represent 100 per cent value.

The opening days of the show are too early, perhaps, to set at rest all of the price problem. Every manufacturer is scouting to find out just what his competitors are doing and the utmost secrecy surrounded many of the price changes until the last moment before they were announced. Some cars opened the first day with their old prices and were dropped before evening. Others held off their price decisions until yesterday or to-day and there is yet a tendency to see what the other makers plan to do. This situation, however, should be ironed out before the close of the week and the meetings of factory officials, distributors and dealers should see the last of the cuts that can be attributed to the show.

Reductions Absorbed

Of course, some lines have absorbed any possible price reduction by improving quality, fittings, etc. There were several such cases and these manufacturers are meeting the price threat by more careful merchandising of their products. This becomes an individual problem but manufacturers and dealers must accept it as a big factor in their 1922 merchandising plans. It was significant that the price guarantee was absent, only McFarlan, so far as could be learned, guaranteeing that the present prices would hold until 1923. Also, there was no unanimity in regard to the readjustment of parts prices to the dealers. Some manufacturers have recently revised their parts lists or have new lists just coming out. Producers, however, who have not reduced car prices are not making any revision or contemplating any change, as a general rule, in their parts list.

Stutz Head Mentioned As Frontenac President

NEW YORK, Jan. 9.—William M. Thompson, president of the Stutz Motor Car Co., has been mentioned as the possible president of the Frontenac Motor Car Co., incorporated under the laws of Delaware for \$1,000,000, to produce the new Frontenac. Thompson is the latest acquisition to the forces backing the production of the car, chief of which is Allan A. Ryan, the dominating figure in the Stutz organization.

Both Detroit and Indianapolis have been mentioned as likely sites for the factory, denial being made, however, that the car will be produced at the Stutz plant. Other than the association of Thompson and Ryan in the new company it is stated that there is no connection between the two organizations.

NAPIER SHOWS PROFIT

LONDON, Dec. 20 (By Mail)—Napier's annual meeting shows that last year's working loss of \$250,000 was this year turned into a profit of \$320,000.

Ford May Advance Lelands \$8,000,000

Property Will Be Sold in February for That Upset Price

NEW YORK, Jan. 10.—Automobile executives attending the New York show are discussing with interest the report from Detroit that Henry Ford is backing the Lelands in their efforts to regain control of the Lincoln Motor Co. The property will be sold by the Detroit Trust Co. as receiver, early next month. The bid of \$8,000,000 for the assets made in behalf of the Lelands is the largest thus far recorded. According to the reports current here this fund will be provided by Ford, although when the bid was filed it was understood stockholders of the company would provide the funds.

Officials Reticent

Both Henry M. Leland and Henry Ford are exceedingly reticent on the subject but it is known they are close friends. Before the receivership petition was filed, it was understood, Ford was asked by Leland to come to the rescue but refused. If he is financing the new plan it is evident he is anxious to have the Lelands retain control of the enterprise. It is not believed that Ford has any idea of linking up his present plant in any way with that of Leland, but that the money would be in the form of a loan.

Taxes May Be Cut Further

A further reduction of \$200,000 in back taxes of Lincoln Motor Co. is in prospect, according to Government agents working on the case. If effected, the final Lincoln tax, originally \$4,500,000, will be slightly more than \$400,000.

Lincoln Motor Co. will continue under the direction of the Detroit Trust Co., receivers, during the New York and Chicago national shows. A plan was considered for a time whereby the company would have been turned back to Leland control under a \$2,000,000 bond, so that they could have carried out special show plans, but after consideration it was thought best that the receiver continue to act until the date of sale.

New Jersey Court Sustains Foster Patent No. 108,731

NEW YORK, Jan. 9.—In a patent infringement suit brought by the Westinghouse Electric & Mfg. Co. against the Sims Magneto Co., based on the Foster patent No. 108,731, the Federal District Court for New Jersey has held that the patent is valid and infringed. The patent covers a device for starting a motor in which the gear on the motor is meshed with the flywheel.

The Sims Magneto Co. was charged with contributory infringement, inasmuch as it was making the equipment for the Maxwell Motor Corp.

PRICE CHANGES ANNOUNCED AT SHOW

Auburn

	Old Price	New Price
5 passenger touring.....	\$1,695	\$1,575
Roadster	1,670	1,575
7 passenger touring.....	1,760	1,615
Coupe	2,475	2,275
Sedan	2,495	2,395

The four-passenger sport model is priced at \$2,195.

Chandler Prices

	Old Price	New Price
5-passenger		\$1,595
2-passenger	\$1,785	1,595
4-passenger		1,595
7-passenger	1,785	1,695
4-passenger Sport.....		1,695
Coupe	2,785	2,295
Sedan	2,885	2,395
Limousine		2,995

Chandler shows for the first time a five-passenger touring car which is priced at \$1,595. The old price on the two and seven-passenger touring cars was \$1,785.

Cleveland

Model	New Price	Old Price
Roadster	\$1,175	\$1,295
Touring car.....	1,195	1,295
Coupe	1,550	2,195
Sedan	1,595	2,295

Crow-Elkhart

	New Price	Old Price
Four-cylinder touring car	\$1,095	\$1,295
Six-cylinder touring car	1,345	1,545
Six-cylinder sedan.....	2,095	2,395

Detroit Electric

Model	New Price	Old Price
Model 90.....	\$2,800	\$2,985
Model 93.....	3,500	3,985

Dodge

Dodge Brothers announces that it will reduce prices on Feb. 1, effective Jan. 1, and no announcement will be made until the first mentioned date.

Dupont

	New Price	Old Price
Roadster	\$3,000	\$3,400
Touring	3,200	3,400
Sedan	4,000	4,900
Coupe	3,800 (new model)	

Earl

	New Price	Old Price
Touring	\$1,185	\$1,285
Sedan	1,895	1,995

Elcar

	New Price	Old Price
Four cylinder models		
Open	\$1,095	\$1,145
Coupe	1,345	1,645
Six-cylinder models		
Open	1,395	1,595
Coupe	2,065	2,495
Suburban	2,115	2,395
Sedan	2,165	2,495

Ferris 60

	New Price	Old Price
Roadster	\$2,575	2,695
Touring	2,475	2,595
Sedan	3,475	3,695

OTHER CAR COMPANIES MAY CUT AT CHICAGO

NEW YORK, Jan. 11—While an extraordinary number of price reductions have been announced in connection with the New York show, it is generally believed that several manufacturing companies which have not made price concessions at this time will announce them at the Chicago show.

There has been some talk that a second cut would be announced by companies which already have made reductions this year, but the industry does not believe that such will be the case.

It is the consensus of opinion that whatever price changes are in prospect will be cleaned up at the Chicago show, and everyone sincerely hopes that such will be the case because it is felt that unless prices are stabilized by that time the entire industry will be discouraged.

Fox

The open models of the Fox are priced at \$3,900. The prices on the coupé and sedan are \$4,900.

Frontenac

Frontenac announced that the touring car would list at about \$2,000 and the sedan at \$2,800 or \$2,900.

Gardner

The Gardner sedan has been reduced \$100 from \$1,695 to \$1,595.

Gearless

Prices of the Gearless (steam) are \$2,650 for the roadster and \$2,600 for the touring.

Grant

Both open and enclosed models are provided with extra equipment under the new prices.

	New Price	Old Price
Touring and roadster....	\$1,385	\$1,285
Coupe	1,895	1,950
Sedan	1,945	1,950

Kelsey

Kelsey announced that the prices on its new model are as follows: Six-cylinder touring, \$1,800 coupé and sedan, \$2,700; sport roadster, \$2,000; four-cylinder touring, \$985.

Kissel

	New Price	Old Price
Standard Touring.....	\$2,175	\$2,475
De Luxe Touring.....	2,675	2,975
De Luxe Coupe.....	3,275	3,775
De Luxe Sedan.....	3,475	3,775

Lexington

	New Price	Old Price
5-passenger touring.....	\$1,985	\$2,100
7-passenger sedan.....	2,285	2,785
Thoroughbred	2,100	

Liberty

	New Price	Old Price
5-passenger touring.....	\$1,295	\$1,595
Sport	1,495	2,400
Sedan	2,245	2,495

Maibohm

	New Price	Old Price
4-passenger sport.....	\$1,495	\$1,595
Sedan and coupe.....	2,165	2,295

Milburn

The five-passenger Milburn electric brougham was cut to \$2,385 from \$2,685.

Noma

	New Price	Old Price
1-D Speedster	\$3,000	\$3,250
1-D Foursome.....	3,100	3,350
1-D Six.....	3,200	3,450

Oakland

	New Price	Old Price
Roadster	\$1,095	\$1,120
Touring	1,145	1,145
Sport	1,265	1,265
Coupe	1,625	1,685
Sedan	1,725	1,785

Paterson

	New Price	Old Price
3-passenger	\$1,550	\$1,595
7-passenger	1,585	1,625
Sedan and Brougham....	2,595	2,695

Peerless

Prices on open Peerless models have been reduced \$90 from \$2,880 to \$2,790.

Premier

	New Price	Old Price
5-passenger touring....	\$3,100	\$3,690
Roadster	3,150	3,790
7-passenger touring....	3,250	3,890
5-passenger sedan.....	5,000	6,000
7-passenger sedan.....	5,100	6,100
5-passenger brougham...	4,300	(new)

Reo

	New Price	Old Price
Roadster	\$1,595	\$1,650
Touring	1,595	1,650
Business coupe.....	1,895	
Coupe	2,355	2,700
Sedan	2,435	2,750

Sayers

	New Price	Old Price
Touring car.....	\$1,695	\$1,795
Sedan	2,795	2,995

Standard

	New Price	Old Price
Open models		
(2-4-7-passenger).....	\$2,500	\$3,400
Sedan	3,600	4,800
Vestibule Sedan.....	3,750	5,000
Sedanette	3,500	4,500
Coupe	3,250	4,500

Stephens

	Old Price	New Price
Roadster	\$1,800	\$1,675
4 and 6 passenger touring	1,850	1,745
4 and 7 passenger sedan..	2,850	2,650
4 and 6 passenger sport..	1,950	1,795

More Price Cuts on Page 95

Parts Service Plan Inaugurated

Country Covered Under New System

Five Companies Included — 40 Central and Many Branch Stations Provided

NEW YORK, Jan. 9—The opening of the New York show has seen the official inauguration of the direct service plan by leading units parts manufacturers. Under the arrangement 40 central parts stations and more than 300 branch stations will begin immediately the furnishing of parts for units direct to owners of cars in which these units are standard equipment.

Included in the plan at the outset are Continental Motors Corp., Timken-Detroit Axle Co., Brown-Lipe Gear Co., Borg & Beck Co. and Spicer Mfg. Co. Each of these represents a separate unit entering into the manufacture of a car. Other manufacturers will be embraced in the plan until it includes at least one manufacturer of each important unit.

Several of the most important results which the unit manufacturers claim for this plan are set forth by the committee in charge of the plan as follows:

Doing away with "pirate" parts—It will make it unnecessary for the dealer to nullify the guarantee on his vehicle by selling his customer inferior parts made by other than the manufacturers of the original unit. This action on the dealer's part has been necessary in the past as he was not able to obtain genuine parts immediately. The stations carry only genuine parts designed, produced and inspected by the specialists of the unit manufacturers organization.

Lowering of parts prices—Direct assistance to manufacturers, dealers, small and large fleet owners and users.

Protection for car and truck manufacturers service when territories are without representation.

Elimination of investment by dealer allowing him to use his working capital in the promotion of sales.

Guarantees genuine parts so that the dealer and owner of specialized vehicles can depend upon purchasing genuine material—All parts are to be trade marked by the unit manufacturer producing them. This will provide a universal means of identification and a guarantee of protection and value.

As one member of the unit manufacturers' committee has put it—"the extent to which the plan succeeds will be directly proportioned to the extent to which it serves the automotive industry in general. It is a great step forward. Its basic ideal of unselfishness is alone sufficiently meritorious to warrant enthusiastic support. The plan

is unique in that it is the first undertaking of its kind in the automotive industry."

The policies under which the stations will operate are in the hands of a committee made up of one representative from each of the companies that are working under this plan.

The station managers are to represent the customers of the unit manufacturers in their respective territories, in promoting the sale of specialized vehicles. Through the stations will be held sales conferences eligible to all dealers and salesmen selling vehicles equipped with units represented by the stations. There will also be conferences held in each station territory for instruction to the dealers' mechanics.

Careful inspection of each major station and each sub-station will be made regularly by a factory representative, so that high ideals and standard set for the stations will be maintained.

Continuous national, trade-paper, newspaper and direct advertising will be run by both unit manufacturers and stations directly promoting the sale of the specialized vehicle.

Service Importance Recognized

For a long time there has been much discussion among the truck and car manufacturers as to whether the parts distributing plan started by some of the leading unit manufacturers would prove satisfactory to all concerned. It now develops that the parts distribution is only one of the many plans of action which is developing for the promotion of specialized vehicle sales. The phrase "Specialized Vehicle" means the cars and trucks that are built of high-grade units produced by unit manufacturers who are specialists in their respective lines.

As one member of this committee expressed it, "service is the cornerstone of the automotive industry and adequate parts service is the mortar which holds this stone in place. A passenger car or motor truck without national parts service is like a battleship without guns, a fine target for a competitor but with nothing to fight back."

One of the greatest drawbacks to the automotive industry in the past has been the inability of the car and truck owner to enjoy uninterrupted service because the dealer was unable to obtain genuine parts immediately. Two of the most important reasons for this is the financial situation of the average dealer and the ever-increasing rate of dealer mortality.

This plan, then, of the leading unit manufacturers is built from the ground up. Acknowledging the importance of service they have started at the beginning by putting parts distribution on a firm permanent foundation, where it will bring the greatest good to the greatest number.

The parts service end of the plan assures the owner and buyer that they can keep

(Continued on page 96)

Recommend Cycle Show for New York

Matter of Change Taken Up at M. & A. T. A. Annual Meeting

NEW YORK, Jan. 10—The Motorcycle and Allied Trades Association at its meeting here to-day recommended to the Cycle Trades of America, a parent body including cycle dealers, jobbers, etc., as well as the motorcycle organization, that the next motorcycle and bicycle show be held in New York City during the first or second week of February, 1923. For many years past the show has been held in Chicago, but there is a definite feeling, on the part of the motorcycle group especially, that there should be a change next year.

The M. and A. T. A. also decided that it would not participate hereafter in the summer meeting of the Cycle Trades of America, which is usually held during August in Atlantic City. The feeling that this meeting was unproductive of any constructive work was unanimous among the motorcycle manufacturers.

May Hold Separate Meeting

It is probable, however, that the M. and A. T. A. will hold a separate midsummer meeting, possibly at the time of the Gypsy Tours in June, which will be a real motorcycle gathering.

Gordon Lee, chief of the Automotive Division of the Bureau of Foreign and Domestic Commerce, addressed the meeting and outlined the service which the automotive division can render to the motorcycle manufacturer. Lee announced that a separate motorcycle section of the automotive division would be installed July 1, 1922.

New Directors Chosen

The following were elected to the board of directors of the association for the ensuing year: Frank Weschler, Hendee Manufacturing Co.; Arthur Davidson, Harley-Davidson Motor Co.; G. E. Atkin, Reading Standard Co.; A. C. Rice, Cyclemotor Corp.; Ignaz Schwinn, Excelsior Motor Mfg. & Supply Co.; E. Wetzel; Max M. Sladkin, Ace Motor Corp.; D. R. Walls, Splitdorf; George Briggs, Wheeler-Schebler; and Dave Kunney of Goodyear Tire & Rubber Co.

G. M. TRUCK PLANT REOPENS

DETROIT, Jan. 9—The General Motors Corp. truck plant at Pontiac has resumed production after the holiday inventory period. The schedule calls for an output of 25 trucks a day, most of which will be of the lighter models.

CLIMBER ELECTS OFFICERS

LITTLE ROCK, ARK., Jan. 10—H. F. Buhler of this city was re-elected president of the Climber Motor Corp. by the board of directors. Other officers elected were G. A. Edmundson, Salem, Ark., vice-president, and J. S. M. Cannon, Little Rock, secretary.

Reports Approved at S. A. E. Meeting

Standards Committee and Aeronautical Sessions Held—Bachman and Beecroft Speak

NEW YORK, Jan. 11—The annual meeting of the Society of Automotive Engineers, which opened here yesterday with meetings of the standards committee and an evening aeronautics session, is proceeding with a schedule which will be completed with the holding of the passenger car session on Jan. 13.

Stamping Recommendations Approved

At the standards committee meeting a majority of the reports of divisions (a summary of which was recently published in *AUTOMOTIVE INDUSTRIES*) were approved with but little discussion, although the reports of the chain division and the engine division were the occasion for considerable comment, pro and con. Some objections were raised to the proposed specifications of minimum breaking strength of roller chains, but it was pointed out that wearing qualities rather than ultimate strength is the controlling factor in most chain applications, and that the former quality is dependent largely upon the case hardening which is best accomplished on low carbon steel which has a relatively low tensile and shearing strength, as compared to higher carbon steels. This view prevailed and the proposed specification was approved.

The proposed system of engine numbering resulted in much discussion, but was finally approved as recommended practice. Action upon the report prepared by the tire and rim division was postponed as a result of overtures made by the Rubber Association of America, which has now promised co-operation heretofore given more in name than in reality.

With this exception all the reports as published were approved, although slight changes of a minor character were made in certain items, and one item, that relating to generator flange mountings in the report of the electrical equipment division, was referred back for further consideration.

Airplane Engine Session

Charles L. Lawrance presented the only paper at the airplane engine session. His subject was Air-Cooled Engine Development. The meeting was attended by about 150 members. Lawrance traced the history of air-cooled cylinder development and predicted that it would not be long before larger air-cooled cylinders would be developed with performance ability equal to that obtained with water-cooled engines.

Considerable discussion of the subject was developed among the members present. Henry M. Crane took the stand that the air-cooled cylinder is still on trial and has not by any means proved itself even though it had an early start.

In the early days, he said, air-cooled jobs outnumbered the water-cooled types. The discussions brought out the fact that in the last year there have been some very notable developments particularly at McCook Field. The discussion made it clear that one of the difficult points to overcome with the air-cooled engine as used in air crafts, is its greater head resistance, whereas, with proper radiator design, it is possible to secure highly efficient water cooling with relatively low head resistance.

Annual Meeting Held

At the annual business meeting there were presented reports on automotive research, progress in aviation, international affiliation of engineers, finances, membership, meetings and section activities, among other subjects. The report of the standards committee was approved in the form submitted. President David

New President of S. A. E.



B. B. Bachman

Beecroft spoke on the Status of the Engineer in Automotive Economics, and President-elect B. B. Bachman spoke briefly on current problems of the automotive engineer.

The tellers of election announced that canvass of the ballots cast by mail vote had resulted in a practically unanimous election of the following officers: President, B. B. Bachman; first vice-president, J. V. Whitbeck; second vice-presidents, F. E. Watts, H. E. Morton, O. W. Young, V. E. Clark and C. B. Segner; treasurer, C. B. Whittelsey; councilors, Lon R. Smith, C. F. Scott, H. M. Crane and W. R. Strickland.

President-elect Bachman, who has for many years held the position of chief engineer of the Autocar Co., has served as chairman of the standards committee, and has been actively interested in the work of the society almost from its inception. He has been an officer of the society and as such a member of the council for several years past, and was at one time chairman of the Pennsylvania section of the society.

New Franklin Car Shown to Dealers

Greeted With Unbounded Enthusiasm—Will Sell for Less Than \$1000

NEW YORK, Jan. 11—The new Franklin 4-cylinder model was shown to dealers at a luncheon at the Commodore hotel to-day and was greeted by them with unbounded enthusiasm.

No definite price has been set but assurance was given the dealers that it will sell for less than \$1,000. It is stated that production will get under way in the near future.

John Wilkinson, the veteran Franklin chief engineer, has spent several years in the development of the new model. It was almost ready for production when the war began and its introduction was delayed. Models have been thoroughly tested in the vicinity of Syracuse.

It is understood the car will be manufactured by a new company and that another plant ultimately will be erected for its production.

Engine Is Air-Cooled

The chassis follows in many respects the line of construction used in the 6-cylinder car. With the exception of there being two less cylinders the engine of the small car is the same as the six. Cylinder dimensions are the same—3¼ by 4 in.—and parts are interchangeable with the six. This also holds true of parts like the clutch, etc.

One departure from the big car is the use of semi-elliptic springs on the 4-cylinder. These are overslung on the rear axle and underslung on the front axle. The frame is of laminated wood construction, carrying at each corner suitable brackets for mounting springs. The wheelbase is 102 in. Wood wheels are fitted, carrying 30 by 3½ in. Goodyear cord tires.

The rear springs have been mounted very close to the wheels and this has made possible the use of a light rear axle. The service brake is on the transmission and the emergency on the rear wheels. The latter are operated by a single cable. The propeller shaft carries two fabric universal joints. Steering is by worm and wheel, operating the tie rod by a transverse drag link.

The engine, which is cooled by a blower fan mounted on the front end of the camshaft, is mounted in an accessible way and is itself accessible. An unusual feature in connection with the carburetion system is the carrying of all the exhaust gases through an aluminum jacket surrounding a hot-spot on the intake manifold. By this layout the forward end of the exhaust pipe is brought around the front cylinder to the carburetor side and thereby escapes the ignition, starting and lighting units on the right side of the engine. The electrical equipment consists of the Atwater Kent system.

Secretary of Navy Addresses N. A. C. C.

Irvin S. Cobb Also Speaks at
Annual Dinner—"Decorations" Bestowed

NEW YORK, Jan. 11—More men prominent in the automotive industry attended the annual dinner of the National Automobile Chamber of Commerce in the grand ballroom of the Commodore last night than ever were present at a similar event. A list of the names of the manufacturing executives at the tables would read like a roster of the industry.

Not only was the dinner a complete success in point of attendance but in every other respect as well. The speakers were Edwin Denby, Secretary of the Navy, formerly an officer of the Denby Motor Truck Co. and the Hupp Motor Car Corp., and Irvin S. Cobb. Colonel Charles Clifton, president of the N. A. C. C., presided as toastmaster. Among those seated at the table of honor were:

Among Those Present

J. K. Robinson, president, Manufacturers' Aircraft Association; C. W. Nash; William E. Metzger; George C. Diehl, president, American Automobile Association; A. R. Erskine; Alvan Macauley; E. H. Broadwell, president, Motor and Accessory Manufacturers' Association; J. Walter Drake; H. H. Rice, treasurer, National Automobile Chamber of Commerce; Gordon Lee, United States Department of Commerce; Windsor T. White; Roy D. Chapin; Charles Clifton, president, National Automobile Chamber of Commerce; C. C. Hanch; Captain Carl T. Vogelgesang, U. S. N., Commandant Brooklyn Navy Yard; A. J. Brousseau; Pierre S. duPont; W. L. Hughson, vice-president, National Automobile Dealers Association; Fred J. Haynes; H. F. Dunn, president, Rubber Association of America; H. M. Jewett; Thomas H. MacDonald, director, United States Bureau of Public Roads; John N. Willys; David Beecroft, president, Society of Automotive Engineers; R. E. Olds; W. A. Woods, New York Automobile Dealers Association and Harry Riccardo.

Denby Cheered

It was evident that Denby has lost none of his popularity within the industry and that automobile men regard his selection for the Cabinet as a reflected honor. He was given a rousing reception when he rose to speak. At that instant the Stars and Stripes were run out on a flagstaff extending from the balcony, naval signal flags reading "Welcome" fluttered up over the speaker's table and the orchestra swung into the Star Spangled Banner.

The Secretary of the Navy paid tribute to the automotive industry for the courage it has displayed during the period of depression and congratulated

BANKERS EVINCE THEIR INTEREST

NEW YORK, Jan. 11—The interest of big bankers in the automotive industry was evidenced at the annual dinner of the National Automobile Chamber of Commerce last night. Among those who attended were:

E. R. Stettinius of J. P. Morgan & Co.; Seward Prosser, president of the Bankers Trust Co.; Percy Johnson, president of the Chemical National Bank; Percy Rockefeller, and Joseph A. Bower, vice-president of the Liberty National Bank.

Other New York banks which had representatives at the dinner were the Chatham & Phenix, the Guaranty Trust Co., the Chase National, the Mechanics & Metals National, the Equitable Trust and the Gotham National.

it upon the fact that it has come through safely. Most of his address was devoted to his experiences as a private and a petty officer in the Marine Corps. He made no reference to the conference at Washington on the limitation of armament but declared:

"Our navy ought always to be the equal of any in the world. It is now and I think it will so remain. I earnestly hope so."

He added that no man would take the fire insurance off his building and declared this would be comparable to lowering the navy below its proper limits.

Cobb made a characteristic after-dinner speech but asserted seriously that general acceptance throughout the world of good roads and the use of motor vehicles would do much to break down racial animosities.

"Decorations" Given

A feature of the dinner was the awarding of the annual "decorations." They were given to David S. Ludlum, president of the Autocar Co., C. Harold Wills, Walter C. Marmon, George M. Graham, Edward S. Jordan and A. R. Erskine.

Wills was told he might some day succeed in getting into the automobile business. Marmon was informed that "only a genius could have taken the scraps from an ancient milling machine business and built an automobile." He was complimented also on the fact that he "had risen above every obstacle, including Fred Moskovics."

Jordan was dubbed "an ambidextrous ambassador of automobile advertising." The head of the Studebaker Corp. was given the title of "Baron Erskine, doctor of financial difficulties."

SPAIN RULES ON ACCESSORIES.

WASHINGTON, Jan. 10—An authorization permitting the purchase during 1922 of automobile accessories in Spain was provided in a Spanish decree dated Jan. 6.

"Best Buying Show", Is General Verdict

Paid Attendance Largest on Record—Practically All Exhibitors Report Sales

NEW YORK, Jan. 12—"The best buying show ever held in New York," is the verdict of veteran automobile men in reference to the annual automobile exposition at the Grand Central Palace. Not only are more retail sales being made but the paid attendance is the largest on record and more western dealers are here for the show than ever before.

Practically every exhibitor reports retail sales and some of them run to substantial proportions.

Dealer interest is one of the striking features of the show and while few distributors are placing large orders they have been much encouraged by the public interest and are confident that sales for the next three months will be much larger than for the same period last year.

No Waning Public Interest

As the show has progressed this feeling of confidence has pervaded the representatives of the entire industry that are assembled here this week. It has demonstrated that there has been no waning of public interest in motor cars. While no exaggerated predictions are being made of sales for the coming year it is the general belief that they will exceed those made in 1921.

The public is keenly interested in the new and improved models displayed at the show, but it is also keenly interested in the question of prices. Except in the highest priced class, prospective motor car purchasers are shopping carefully and they are determined to get the greatest possible value for their money.

Especially interest is being shown in closed models and gratification is expressed by visitors to the show over the fact that a movement is well under way to cut sharply the difference in price which heretofore has existed between open and closed models.

MAKES FREIGHT ALLOWANCE

BALTIMORE, Jan. 9—Black & Decker Mfg. Co. announces that effective immediately it will make a freight allowance on shipments of 100 lb. or over to points in the United States and Canada, thus making it possible for jobbers to sell its goods in the two countries without adding anything to the price to cover freight.

In the past the majority of jobbers have worked under a handicap of having to pay the freight or charge the customer extra to include the freight. This is equalized in the present move, which is one strongly recommended by the Automotive Equipment Association in behalf of its jobber members.

Cuts Small Factor, N. A. D. A. Head Says

Cars Will Be Purchased on Strength of Past Per- formances

NEW YORK, Jan. 10—Price cuts are not going to sell automobiles this season, according to Harry G. Moock, general manager of the National Automobile Dealers Association, who reached New York to-day from St. Louis to attend the automobile show. Moock says:

Price cuts, new models, hot spots, gear boxes and any other so-called features, are not the things that will bring buyers into the market this year. Mechanical features served their turn when it was a rising market, but the public is not coming back this year for any of those things. Something more is demanded this year.

As I view it, the market this year is going to consist of about 150,000 new buyers; that is, persons to whom owning an automobile will be a new thing, and the balance will be replacements.

Public to Buy on Car Performance

The replacement market is going to be dominated by people who have a pretty definite idea, gained by actual experience, with a certain make of car. Some of the replacement buyers are going right back to the dealers who supplied them with a car in the first place. They will go back to the dealer who supplied them a meritorious automobile and who gave them sufficient and reasonably priced service. The car that has not stood the test, the dealer who hasn't stood the test, the factory that hasn't stood the test, will not be given another chance in 1922. The public in 1922 will not buy on a promise.

The public has bought for four or five years back on promises, but the public of 1922 is going to buy motor cars that have made actual performance records during those five years. There is going to be a good business for those dealers and manufacturers who kept the promises they made in that five year period. Those dealers and manufacturers who did not keep their promises during that period are going to have a tough battle for business.

Expects Consignment Deliveries

I do not look for any such business in 1922 as was done by the dealers in 1920. 1922 probably will be as good a year as 1921 for those dealers and factories that are producing meritorious automobiles.

By that I do not mean necessarily the automobiles that have a great production and are distributed nationally, but I mean those automobiles that have been built right, priced right, and maintained right. Probably some of the smaller factories will have to give up their idea of national distribution and be satisfied to distribute their cars within a limited radius of their factory which they can do profitably because of the freight rates on automobiles from their factory to various parts of the country. They will avoid this extra charge in handling their products close to the factory.

Before the year is over, I expect that a great many factories will be sending automobiles to dealers on consignment and abandoning the idea that they can sell their product sight-draft-bill-of-lading-attached as they have done in the past. When this is

done by the factory, there is going to be a great deal more attention paid by the manufacturer to the personal character of the dealer he selects to represent him in a territory.

There is going to be plenty of money for the dealer who has character, who is honest, who is a business man, and who is handling a proved automobile. I have had enough conferences with bankers to know that there are half a dozen or a dozen men in every city handling automobiles who have almost an unlimited credit at the bank, but likewise there are scores of dealers in each city who have not such credit facilities and who will be greatly handicapped in the 1922 battle for business.

Used cars proved a tremendous problem to the entire trade last year. There is no solution for the used car problem for the trade as a whole. The solution lies in the hands of the individual dealer coupled up with the necessary co-operation on the part of his manufacturer.

Many Price Reductions Made at New York Show

(Continued from page 91)

Studebaker

Series 22 Special Six	New Price	Old Price
Chassis	\$2,200	\$1,350
Touring	1,475	1,635
Two-passenger roadster	1,425	1,585
Club roadster	1,475	1,635
Coupe (4-passenger)	2,150	2,450
Sedan	2,350	2,550

Series 22 Big Six	New Price	Old Price
Chassis	1,500	1,650
Touring	1,785	1,985
Coupe	2,500	2,850
Sedan	2,700	2,950

New Light Six	New Price	Old Price
Chassis	875	975
Touring	1,045	1,150
Two-passenger roadster	1,045	1,125
Coupe roadster	1,375	1,550
Sedan	1,750	1,850

Sun

The price of the Sun has been set at \$475.

Velie

	New Price	Old Price
Roadster	\$1,395	\$1,585
Touring car	1,395	1,585
Coupe	2,085	2,485
Sedan	2,085	2,485

WILLS SAINTE CLAIRE REDUCES

NEW YORK, Jan. 12—After an announcement Tuesday that no price changes would be made at this time, C. H. Wills & Co. announced to-day that prices on its various models would be cut materially, effective Jan. 12. The schedule follows:

	Old Price	New Price
Touring car and		
Roadster ...	\$2,875	\$2,475
Coupe	3,750	3,275
Sedan	4,100	3,475

CHAMPION REDUCES PRICE

PHILADELPHIA, Jan. 9—Champion Motors Corp. has reduced the price of its special passenger car model from \$1,195 to \$1,095.

Dodge to Announce New Prices Feb. 1

Will Be Effective From First of Year, President Tells Dealers

NEW YORK, Jan. 11—Dodge Brothers cars will be reduced in price dating from Jan. 1 but the new prices will be withheld from the public until Feb. 1. President F. J. Haynes made the announcement at the annual luncheon and meeting tendered to dealers at the Pennsylvania Hotel yesterday. The announcement read:

"Dodge Brothers will announce on Feb. 1, 1922, a substantial reduction in the prices of their cars, effective Jan. 1."

There was much comment among the 1700 dealers attending on the universal price procedure. The report that the touring car will be priced at \$775 was generally accepted.

The reason most generally advanced for the unique handling of the reduction is that it will give the factory the use of several millions of dollars for the period ensuing between the time the prices are actually effective and the time rebate is made to the dealer.

The feature of the dinner aside from the price declaration was a playlet written by Montague Glass in which his characters Potash and Perlmutter were depicted as Dodge dealers.

BREWSTER READJUSTS

NEW YORK, Jan. 9—Brewster & Co. has announced the following reductions on the prices of its model No. 91:

	Old Price	New Price
Roadster	\$7,000	\$6,000
5-passenger touring	7,000	6,000
Sedan	10,500	9,200

NEW SELDEN PRICES

ROCHESTER, N. Y., Jan. 9—New prices on its line of trucks are announced by the Selden Truck Corp. The prices are:

	New Price	Old Price
1½ to 2½ ton	\$2,250	\$2,360
2½ to 3½ ton	3,250	3,425
3½ to 5 ton	3,750	4,175
5 to 7 ton	4,950	5,600
Motorbus chassis (capacity 18 pass. seated) ..	3,350	
Motorbus chassis (capacity 30 passenger seated)	4,350	

OTHER GARDNER CUTS

NEW YORK, Jan. 12—The Gardner Motor Co. has reduced the price of its touring car and roadster from \$1,095 to \$895. The price a year ago was \$1,295.

NERACAR IS SHOWN

NEW YORK, Jan. 10—One of the exhibits at the Hotel Commodore is the Neracar, manufactured by the Ner-A-Car Corp. of Syracuse. It is a motorcycle, rather than an automobile, and the price has been fixed at \$225. The company expects to produce 3500 in the first six months of 1922.

Earl Is Arranging Further Financing

Continental Bank Takes Action Looking Toward Construc- tive Plan for Future

NEW YORK, Jan. 11—Ralph Van Vechten of the Continental & Commercial Bank of Chicago has called a meeting to-day of the larger creditors of Earl Motors, Inc., to discuss the future of that company. It is believed some constructive plan will be decided upon. Clarence A. Earl, president of the company, stated to-day he had been assured the funds needed to carry on the affairs of the company as originally planned would be provided by other banks.

When the Tilden interests invested in Earl Motors they provided \$3,000,000 with which bank loans were retired and pledged an additional \$1,500,000 for working capital. This promise could not be carried out, however, because of the difficulties in which the Tilden estate and the Fort Dearborn banks found themselves. The interest of the Continental & Commercial Bank in the Earl company arises from the fact that it took over the assets of the Fort Dearborn banks. John Fletcher, who represented the Fort Dearborn banks and the Tilden estate in Earl Motors, has retained his personal interest in the company and is assisting in the raising of the additional funds.

Earl stated that the position of the company is such that operations can be continued without difficulty until the new financing is arranged and that his company will not be seriously affected by the difficulties of the Fort Dearborn banks.

Makes It One-Man Job

CHICAGO, Jan. 11—Ralph Van Vechten apparently has decided to make a one-man job of the rehabilitation of Earl Motors. He said to-day he had called the meeting of creditors to put the situation squarely up to the creditors. If they are willing to make concessions a plan can be worked out whereby the company can be properly financed. Bank loans are of minor importance and merchandise creditors have claims aggregating only about \$1,000,000. Van Vechten has engineers going over the Earl models and a report will be made at the meeting to-morrow.

Parts Service Plan Inaugurated at Show

(Continued from page 92)

their vehicle in uninterrupted service anywhere in all parts of the world where automotive equipment is used.

Car and truck manufacturers all see the importance of building for the future. To do this every selling force must be brought to bear to produce repeat orders. The greatest selling force is satisfaction through past performance. The greatest satisfaction is

through adequate efficient service. Real service is possible only with genuine parts instantly available. Parts service then is a great selling force and one which it has not been possible to utilize in the past.

So reason the leading unit manufacturers responsible for this plan and around this ideal they have built a far reaching organization.

This plan divides the United States into forty territories. The size of each territory has been proportioned in accordance with the population, vehicle registration, buying power and the vehicle sales possibilities for the future. Each of these forty territories is to be serviced by what has been called a major parts depot. This is to serve as a central distributing point for the territory.

Of the forty stations planned, thirty-five are now in operation with the remaining five in process of development.

In each territory and under the jurisdiction of the major station are a series of sub-stations. These sub-stations distribute in a specified local territory. There will be from six to ten sub-stations under each major station. The location of each sub-station is such that immediate parts delivery will be possible in all important localities and a maximum of five-hour service possible in the less populated districts.

Chain Stations Provided

It is estimated that there will be at least 325 sub-stations distributing genuine parts in their respective territories.

A chain of stations suitably located will take care of the important market. Statistics accumulated by the unit manufacturer indicate that no other single cause has done more to limit the sale of specialized cars and trucks in Canada than lack of protection as a result of practically no parts service.

The first stations to be established in Canada, will be at Vancouver, Winnipeg, Toronto, and Montreal, with sub-stations under each major station.

Plans are already under way for the establishing of stations throughout the British Isles, Australia, Hawaii, Cuba, Mexico, Netherlands, Norway, Sweden, India, Japan, and in fact every country where specialized vehicles are used.

This world-wide organization is to be devoted to one fundamental task—to promote the sale of specialized cars and trucks. The policies under which these stations will operate are in the hands of a committee made up of representatives of the leading unit manufacturers.

Overflow Accessory Show Includes 132 Companies

NEW YORK, Jan. 9—The Hotel Imperial is having a dealers' equipment show held under the auspices of the National Retail Merchants and Buyers' Association. There are 132 firms represented and the show is to last from Jan. 9 to 20. A rather unusual method of space allotment is made.

There is no charge for space but the association gets 7½ per cent on all orders taken at the show. Two and one-half per cent of the gross amount is rebated to any firms buying their material or parts at the show. This leaves 5 per cent of the gross amount clear for the association.

The exhibits have been well arranged for display purposes but the first two days at the show were very disappointing in the matter of attendance.

M.A.M.A. Re-elects All Its Directors

Officers to Be Selected Will Be Those Who Are Now Serving

NEW YORK, Jan. 12—Hundreds of members of the Motor & Accessory Manufacturers Association were summoned last night to be present in the High Court of Merriment presided over by Chief Justice Jollity in the person of Sidney S. Myers in the grand ballroom of the Hotel Commodore. Julius Tannen, who was the original Perlmutter in "Potash and Perlmutter," was the clerk of the court and he ably abetted Myers in the production of merriment.

At the close of the "judicial proceedings" the entire Midnight Frolic show from the Ziegfeld roof was given. The annual entertainment of the M. A. M. A. followed the usual dinner. It was the second year the guests had been entertained by a Midnight Frolic show. There were no speeches and the show was in charge of Myers assisted by M. Lincoln Schuster, assistant general manager of the association.

All directors of the association were re-elected at the annual meeting yesterday. The present officers will be re-elected at an organization meeting of the directors to-day. Only routine business was transacted at the annual session.

Electric Service Association

NEW YORK, Jan. 9.—Members of the Automotive Electric Association at its winter meeting in the Hotel Biltmore, referred a resolution to amalgamate with the Motor and Accessory Manufacturers Association as a group, to a special committee headed by G. Brewer Griffin, which will report to its board of governors at a meeting set for April 7.

The convention covered two days, addresses being made on the first day by President G. B. Griffin, M. L. Hemingway, general manager of the M. A. M. A., who spoke on the advantages of the group plan of organization, and by W. R. Bassett, industrial engineer. Speeches on the second day were by C. C. Parlin of the Curtis Publishing Co., and Harry Tipper, business manager of AUTOMOTIVE INDUSTRIES.

A. D. Libbey of the Splitdorf Electrical Co., Newark, was elected president of the organization to succeed G. Griffin. Other officers were re-elected as follows: C. O. Miniger, first vice-president; E. C. Wilcox, second vice-president; R. J. Nightengale, third vice-president; M. W. Bartlett, fourth vice-president; George S. Cole, secretary and treasurer.

New York Department

NEW YORK, Jan. 9.—To provide a clearing house for the activities of the various groups of manufacturers engaged in the same lines of activity which have affiliated with the Motor and Accessory Manufacturers Association, a new
(Continued on page 101)

Questionnaire Seeks Foreign Information

Government Asks Representatives Abroad for Registration—Data to Be Analyzed

WASHINGTON, Jan. 9—Questionnaires on 1921 registration of motor vehicles in foreign countries have been prepared by the automotive division of the Bureau of Foreign and Domestic Commerce and sent to Government agents abroad in an effort to obtain comprehensive data on foreign automotive markets. It is the intention of the division to compile and analyze this data in as complete form as possible for dissemination through the industry as a guide to the relative importance of foreign markets. It is expected that it will require three or four months to gather and compile data accurately.

Information to Be Complete

Gordon Lee, chief of the division, has arranged classifications so that returns will be of the maximum service to the industry. Consuls have been instructed to make particular effort to obtain official figures in each locality and where figures for the country as a whole are unobtainable it is suggested that figures for all districts or states available be given and estimates as to the registration in the rest of the country.

The questionnaire has seven subdivisions. Section one covers passenger cars, whether steam propelled, electrically propelled, or gasoline driven; section two, motor trucks, including motor buses, motor delivery wagons, etc., and type of power. Section three relates to tractors, whether caterpillar or tractor laying type or wheel type.

Section four covers trailers, whether for motor cars or tractors; section five, motorcycles; section six, airplanes and seaplanes and information is required as to military, commercial or privately owned planes. Section seven concerns mechanically propelled fire-fighting apparatus with number of pumping engines, hook and ladder, hose carts and other equipment.

M. A. M. A. Receives Copies

On request of the Motor Accessory Manufacturers' Association the division has prepared a tentative questionnaire on foreign trade and submitted it to the association for distribution if desired.

The questionnaire covers such points as the kind of automotive products manufactured (if more than one product, the percentage of value of each product to the value of the total output is requested); percentage of products sold outside the United States, total and by specified products in 1920 and 1921; percentage of products expected to be sold abroad in 1922; special foreign markets giving percentage of each to total exports; markets which members are planning to develop and in what foreign countries prod-

ucts are manufactured for members of the association.

Another question is: "In what countries do foreign firms manufacture your products on a royalty basis and specify products?" The question is also asked as to the percentage of exports handled through the manufacturers' own overseas selling branches through commission houses and through export houses. Several questions are asked relative to distribution and advertising and methods of figuring advertising appropriations abroad and whether an attempt is made to regulate selling prices abroad; the use of catalogs; chief complaints received from abroad regarding export practices or products sold abroad.

This questionnaire may be revised by the association and then distributed to the membership.

Inventory Situation Is Vastly Improved

(Continued from page 87)

The new orders will be at prices varying little from the prices to which the inventories have been reduced, and in most cases, if varying at all, will be due principally to market variations in the important commodities.

There are several instances of exhibits at the show where new low price models have been brought out by leading makers with the thought uppermost of making a quick cleanup of heavy inventories not necessarily high priced. This will permit the companies to turn into cash these piled up goods, which probably, with only their former higher priced cars to work with, would have taken a year or more to work up.

Four Former Officials Return to Locomobile

BRIDGEPORT, CONN., Jan. 9.—Revival of prosperity and extensive development of business at the Locomobile Co. plant here is indicated this week, in the return of four former officials of the concern.

B. G. Roos, who was called to the Pierce Arrow factory about a year and a half ago, when he severed his connections with the Locomobile plant, as assistant chief engineer of the passenger and truck designing department under A. L. Riker, becomes chief engineer under the new régime.

Prior to his leaving here, he had been connected with the Locomobile plant for about eight years and is a well-known figure in the automotive world. Following the war, he studied abroad to further his ideas along truck design lines, using models of cars that had seen war service, to determine remedies against wear and tear.

Others who have returned to the local corporation and their assignments are E. A. Travis, who was connected with the New York Metropolitan district for about a year, general sales manager; Clinton B. Amorous, lately connected with the Daniels Motor Car Co.

Aero Club Launches New Organization

Will Consolidate Group Activities and Have Headquarters in Washington

* NEW YORK, Jan. 10—Establishment of a national aeronautical organization, with headquarters in Washington, for the purpose of consolidating the activities of various groups interested in the promotion of aviation, was announced at a dinner of the Aero Club of America held at the Hotel Commodore last night. A committee with Benedict Crowell, president of the Aero Club of America, as chairman, has been appointed to arrange the formation of the national body.

Similar to A. A. A.

The plan has been under advisement for several months because it was realized that the duplication of work handicapped all parties. The new body, national in scope, will hold a position in aviation similar to that of the American Automobile Association. The National Air Association, the American Flying Clubs and the Aero Club of America will be united under one banner. The new organization will take an active interest in all legislation and other affairs relating to control and operation of aircraft. Like the A. A. A., it will supervise contests and races throughout the country. The exact definition of its function will be given out when the organization work is completed. The personnel of the Crowell committee has not been announced.

It is the intention of the consolidated organizations to lead the fight for the establishment of a bureau of aeronautics in the Department of Commerce, as proposed by the so-called Wadsworth-Hicks bill introduced at the extraordinary session of the present Congress. They will also have the co-operation of the Aeronautical Chamber of Commerce in this work.

Republic Rubber Corp. Sued for \$279,959 on Contract

CLEVELAND, Jan. 9—The Republic Rubber Corp. of Youngstown has been made defendant in a suit in Federal Court by the Brighton Mills of New Jersey, which claims damages of \$279,959 and asks for the appointment of a receiver. Plaintiff alleges that the Youngstown company is indebted to the extent of \$64,959 for tires and fabric and \$215,000 for damages for failure to accept deliveries on a contract calling for \$376,000 worth of merchandise.

Permission to issue \$1,000,000 receivers' certificates was granted C. H. Booth of Youngstown, who was appointed receiver of the company last June. The money will be used to continue the company in operation and prevent the property deteriorating.

Dunn Again Heads Rubber Association

De Lisser and Rutherford Chosen Vice-Presidents at Annual Meeting

NEW YORK, Jan. 9—H. T. Dunn was re-elected president of the Rubber Association of America at the annual meeting to-day in the Waldorf Astoria. Horace De Lisser, chairman of the board of the Ajax Rubber Co., was elected first vice-president, and W. O. Rutherford, vice-president of the B. F. Goodrich Rubber Co., second vice-president.

Seneca G. Lewis of the Pennsylvania Rubber Co., J. N. Gunn of the United States Rubber Co. and John S. Lowman of the Philadelphia Rubber Co. were re-elected directors, and J. W. Thomas, Firestone Tire & Rubber Co., and E. G. Wilmer, Goodyear Tire & Rubber Co., were named new directors to serve three years. A. L. Viles is general manager.

A resolution was adopted abolishing the associate membership class, composed hitherto of executives of companies holding membership in the association.

Many Activities During Year

The past year was filled with activities for the association, as shown in Viles' report. The work accomplished was taken up at approximately 75 meetings of the various committees and divisions or their sub-committees and developed a very gratifying increase in the desire to co-operate.

Chief among the accomplishments was the recommendation of the association that a change be made in the mileage guarantee practices. This movement has been indorsed by practically all the tire manufacturers who have put the new method of handling the adjustment problem into effect.

The association took an active part in legislative matters and enlarged the scope of its work in the publishing of statistics relating to the industry.

It recommended uniform protection of dealers against loss on unsold tire merchandise in the event of a price decline which gives the dealer protection only upon goods invoiced to him within 30 days prior to the date of the decline. It recommended also a uniform practice with respect to the destruction of worn-out pneumatic tire casings in order to prevent unscrupulous rebuilding, re-treading and resale.

Secured Freight Rate Changes

Included in its recommendations were a common policy with respect to a service charge against tire merchandise returned to the manufacturers for exchange or credit and standard rules for the inspection of waterproofed automobile fabrics, standard shrinkage allowances and a uniform contract form.

The association also sustained and strengthened the recommendation as to non-participation by tire manufacturers in shows, fairs or exhibitions. It co-

operated with the Bureau of Standards in drafting contemplated specifications for pneumatic tires, inner tubes and solid tires and advanced the work of standardizing industrial truck tire sizes.

Through its endeavors important freight rate and classification changes were secured.

Weston Heads Tire Division

NEW YORK, Jan. 11—J. C. Weston of Ajax Rubber Co., Inc., was elected chairman of the tire manufacturers' division of the Rubber Association of America at the annual meeting this week. J. V. Mowe, Kelly-Springfield Tire Co., was chosen vice-chairman. Companies elected to the executive committee are: Brunswick-Balke-Collender Co., Firestone Tire & Rubber Co., Fisk Rubber Co., General Tire & Rubber Co., B. F. Goodrich Co., Goodyear Tire & Rubber Co., Hewitt Rubber Co., Hood Rubber Products Co., Kelly-Springfield Tire Co., Lee Tire & Rubber Co., Michelin Tire Co., Miller Rubber Co., Norwalk Tire & Rubber Co., Pennsylvania Rubber Co., Swinehart Tire & Rubber Co., United States Tire Co.

Approval was given to proofs of a poster setting forth the new dealer warranty as fixed recently by the division and these will be sent forward at once to dealers everywhere. Standardized tire and rim sizes upon which the technical committee of the division is working with committees of the National Automobile Chamber of Commerce and the Society of Automotive Engineers were discussed but no action taken.

Experiences of manufacturers with the new service charge on returned goods were discussed but no change was suggested in the present plan.

Fergusson Will Rejoin Pierce-Arrow Company

NEW YORK, Jan. 9—The "old guard" is returning to the organization of the Pierce-Arrow Motor Car Co. The enthusiasm which was a feature of the organization in years gone by is coming back and the outlook for the company is more cheerful than it has been in the past two years. It is understood that David Fergusson will return to the company in the near future as vice-president in charge of engineering.

The announcement by Colonel Charles Clifton, chairman of the board, that M. C. Forbes had been placed in charge of operations was misconstrued. Forbes' title remains that of vice-president and no one will be elected for the present to succeed George W. Mixter as president.

There has been a material increase in the truck branch of the company's business and passenger car sales are increasing slowly. The dealer organization has remained loyal and is doing everything in its power to increase business.

The financial situation of the company is much more comfortable. The last quarter of 1921 will show a small profit and all losses on inventory have been taken. Some of the company's bank loans have been liquidated and the remainder is understood to have been renewed for a year.

Railroad Interests Meet in Washington

Brotherhoods Initiate Call—Conference Held to Forestall Strike Possibility

WASHINGTON, Jan. 10—Much interest and speculation has been developed as a result of a meeting quietly held last Saturday night at the home of the Secretary of Commerce, between himself, railroad executives and the heads of the four railroad brotherhoods. The fact that the meeting was held did not become known generally until yesterday, and no comment was made upon it by any government source until to-day, when at the White House it was stated that it was held at the suggestion of the Administration with a desire to avoid conflicts prevailing and threatened with regard to transportation services.

While the remark was cryptic, it is reported that the discussion related to a national wage agreement and that the brotherhood representatives, who are said to have initiated the conference, are endeavoring to have the Administration act on their behalf and have the national agreements restored.

Further Meetings Contemplated

The suggestion is said to have been made to the president of the Railroad Brotherhood men to call the conference and that as a result he requested Secretary Hoover to bring it about to represent the Administration.

A statement at the White House was to the effect that further conferences will be held.

The railroads, it is claimed, had no part whatever in calling the conference and what their attitude was toward questions discussed is not known. In the absence of definite information shippers have expressed apprehension lest the railroad brotherhoods are trying to compel the adoption of some agreement as to wages, working rules, etc., that would make it impossible for the railroads to reduce rates further, so urgently insisted upon by shippers as a whole.

Cent Tax on Gasoline Proposed in Maryland

BALTIMORE, Jan. 6—In his message to the General Assembly of Maryland, Governor Ritchie recommended the passage of a bill placing a tax of one cent a gallon on gasoline beginning June 22, 1922. Such a tax already has been approved by automobile interests in the city.

The tax would continue, according to the message, until a road deficit is wiped out, probably by January, 1923, when it would be reduced to the nominal figure of \$1, provided the two cent tax would yield the necessary amount for road maintenance. If it would not, there would be a proportionate reduction in the registration fee.

FACTORY EXECUTIVES IN ATTENDANCE

NEW YORK, Jan. 9—Factory executives here for the show include:

Ambassador—P. H. Geyser, vice-president and general manager; H. C. Bradfield, director of sales and advertising.

Anderson—J. G. Anderson, president; J. W. Anderson, vice-president; W. A. Anderson, sales manager; W. Clark Little, advertising manager.

Apex—H. T. Hanover, general manager; C. W. Butterfield, sales manager.

Auburn—J. I. Farley, vice-president and general manager.

Bay State—R. F. Long, president; R. H. Long, vice-president and treasurer; Charles B. Eastman, sales manager.

Buick—E. T. Strong, general sales manager; A. B. Batterson, advertising manager. Chevrolet—J. H. Newmark.

Cleveland—J. V. Whitbeck, president; Sid Black, sales manager; E. Wooler, chief engineer; J. T. Nicholson, service manager.

Columbia—William E. Metzger, vice-president; A. T. O'Connor, secretary-treasurer; W. L. Daly, sales manager; William C. Hunt, advertising manager.

Crow-Elkhart—Henry Schmid, first vice-president.

Davis—George W. Davis, president; Walter C. Davis, general sales manager.

Detroit-Electric—A. C. Downing, vice-president in charge of sales; George M. Bacon, vice-president in charge of engineering.

Dixie Flyer—S. K. Miller, vice-president and sales manager.

Dodge Brothers—Fred J. Haynes, president; G. H. Phelps, advertising manager.

Dorris—G. P. Dorris, president; Webster Coburn, vice-president and general manager; J. T. Rumble, sales manager; B. A. Purcell, city sales manager, St. Louis; R. M. Whitney, eastern representative, Philadelphia.

Dort—J. Dallas Dort, president; J. D. Mansfield, sales manager; H. S. Daniels, advertising manager.

Dupont—E. D. Knowles, sales manager; B. R. Kinsey, service manager.

Earl—C. A. Earl, president; K. R. Jacoby, vice-president in charge of sales; W. M. Zerby, traffic manager; D. M. Shaw, advertising manager; J. C. Baggott, eastern division manager.

Elgin—C. S. Pope, chief engineer; L. F. Johnson, assistant sales manager; A. L. Chambers, advertising manager; A. H. Sackett, service manager; F. M. Goodman, eastern district manager.

Elcar—U. G. Manning, vice-president in charge of sales; W. H. Patterson, vice-president in charge of production; James A. Bell, production.

Ferris—W. E. Ferris; C. Floyd Greene, general sales manager.

Fox—Ansley H. Fox, president.

Frontenac—Louis Chevrolet, president; C. W. Van Ranst, chief engineer.

Gardner—Russell E. Gardner, Jr., vice-president in charge of sales; F. W. Gardner, vice-president in charge of production; W. H. Yeldell, advertising manager.

Gearless—R. R. Starnes, president; W. H. Edmundson, general manager; Frank E. McClintock, secretary; G. W. Myers, assistant engineer.

Grant—D. A. Shaw, president; George C. Hubbs, vice-president and general manager; F. S. Denneen, treasurer; F. S. Stratton, sales manager and George Grant, director.

Gray—F. L. Klingensmith; F. F. Bell, vice-president and general manager.

OLD TIMERS EMBARK ON CRUISE TOGETHER

NEW YORK, Jan. 10—The first annual cruise of the Old Timers' Club took place on the S. S. Flotilla last night. In spite of the fact that the old members of the industry are not on the whole seafaring men, it was voted such a success that future annual banquets will probably also take the form of cruises. The 400 Ancient Mariners of the industry who were present had previously voted that anyone attempting a speech would be "keelhaunched," so that there was no effort made in this direction and the evening was given over to good fellowship.

Old members of the industry from all parts of the country, with a very liberal sprinkling of Pacific Coast representatives, were on board. The cruisers were from all branches of the industry, engineers joining in the chanties with dealers, jobbers and manufacturers and all declaring themselves good shipmates regardless of the weather that the good ship will encounter during the coming years.

H. C. S.—H. C. Stutz; G. H. Ford, sales manager; C. C. Merz, assistant to president. Handley-Knight—J. I. Handley, president; John Yoke, general sales manager; H. D. Little, divisional sales agent.

Hanson—G. E. Hanson, president; O. R. Randall, sales manager.

Hatfield—L. I. Hatfield, president; H. M. Hatfield, secretary.

Holmes—G. H. Paddock, assistant sales manager.

Hudson—Roy Chapin, president Hudson; W. J. McAneeny, president Essex; O. H. McCormack, vice-president in charge of sales.

Hupmobile—Charles D. Hastings, president; DuBois Young, factory manager; R. C. Hutchinson, general sales manager; Fred Dickinson, advertising manager.

Jordan—E. S. Jordan, president; W. B. Reilly, Paul Sens, R. S. Begg, S. R. Thomas, J. H. Kelly.

Kelsey—C. W. Kelsey, president and general manager.

King—A. Weber, president; Wallace C. Hood, director of sales; H. Alperin, sales manager; Benjamin Stevenson, factory manager.

Kissel—George Kissel, president; Will Kissel, vice-president; Ralph Kay, advertising manager.

Kline-Kar—J. A. Kiine, vice-president and general manager; W. B. Vaden, sales manager; J. P. Harbold, chief engineer.

LaFayette—E. C. Howard, vice-president and general sales manager; Leo M. Burnett, advertising manager.

Leach-Biltwell—Roy D. Heartz, sales manager.

Lexington—Frank B. Ansted, president; Emory Huston, advertising manager; L. A.

Hanson, secretary; G. W. Hoyt, sales manager.

Liberty—Percy Owen, president; Joseph E. Fields, vice-president in charge of sales.

Lincoln—R. C. Getzinger, sales manager.

Locomobile—E. A. Travis, general manager; Delmar G. Roos, chief engineer.

Malbohm—H. C. Malbohm, president; W. J. Corr, general manager; T. W. Cushing, sales manager; W. W. Jeffery, assistant sales manager; C. G. Jerosch, export manager.

Marmon—W. C. Marmon, president; F. E. Moskovics, vice-president.

Maxwell—William R. Wilson, president; A. E. Barker, vice-president in charge of sales; J. J. Plath, director Maxwell sales; E. W. Clarke, director Chalmers sales, and W. J. Mattimore, advertising manager.

McFarlan—A. H. McFarlan, president.

Mercer—T. E. A. Barthel, vice-president and general manager; J. P. Oliveau, chief engineer; J. W. MacMorris, factory manager; W. A. Smith, sales manager.

Milburn—R. E. Woodhull, sales manager; K. A. Ridenour, district sales manager.

Mitchell—W. L. Jacoby, president; John Tainsch, sales manager; D. E. Roche, service manager; George Bliss, assistant sales manager; P. J. Batenburg, chief engineer; E. A. Weiss, assistant chief engineer.

Moon—Stewart McDonald, president; F. H. Rengers, sales manager; E. H. Serrano, export manager; D. G. Halley, eastern sales manager.

Nash—C. W. Nash, president; C. B. Voorhis, vice-president and sales manager; A. R. Travers, advertising manager.

National—George M. Dixon, president; William Guy Wall, vice president and chief engineer; M. E. Elstun, secretary-treasurer; E. W. Hurd, sales manager; G. R. Miller, advertising manager and assistant sales manager.

Ogren—R. S. Wiltout, general manager; Foster D. Miller, director of sales and advertising; Fred G. Smith, secretary and treasurer.

Packard—H. H. Ills, sales manager.

Peerless—R. H. Collins, A. R. Cunliffe, Wilbur Collins, F. J. Miller, L. D. Sasser.

Pierce-Arrow—Charles Clifton, chairman of the board; M. C. Forbes, vice-president; Charles Sheepy, chief engineer; L. E. Corcoran, passenger car sales manager; R. O. Patton, truck sales manager.

Pilot—George E. Seidel, president; Joseph W. Conner, general sales manager.

Premier—M. A. Whipple, vice-president and general manager; H. E. Doty, general sales manager; A. L. Nelson, chief engineer.

R & V Knight—H. A. Holder, president; J. M. Ryan, eastern representative.

Reo—D. B. McCoy, advertising manager.

Saxon—H. L. Bill, vice-president and general manager; C. H. Becker, sales manager; D. C. Bayne, secretary and treasurer; J. H. Hickey, service manager.

Stanley—Frank J. Prescott, president; Prescott Warren, vice-president; S. C. Crane, sales manager.

Stearns—George L. Booker, general sales manager.

Stephens—R. W. Lea, vice-president; H. J. Leonard, general manager; C. Roy Clough, sales manager; C. Fred Hunter, eastern sales manager.

Stutz—W. N. Thompson, president; Fred Wilson, sales manager; E. T. Klee, purchas-

(Continued on page 105)

Government Delays Association Policy

Attorney General Says Announcement Might Affect Suits Now Pending

WASHINGTON, Jan. 10—The Department of Justice will not announce in any form a government policy relating to open price associations. This statement was made this afternoon by Attorney General Daugherty and came as a complete surprise. Previous statements from other government sources had led to the well defined belief that the government would outline and make public such a policy based on the decision of the Supreme Court in the Hardwood Lumber case.

Plainly, the Department of Justice position conflicts with that of the Department of Commerce which had been seeking to have a government policy fixed and announced and the statement was made only this week that conferences to this end were under way. It is now a question as to what the effect may be with regard to further co-operation between the Department of Commerce and trade associations which have been supplying it with information. Already this co-operation was lessened somewhat in consequence of the Hardwood decision.

Hoover Judgment Relied On

The attorney general, however, said that the Hardwood decision is the most far reaching and helpful on the subject involved that ever had been handed down by the Supreme Court. While the government desires to be accommodating to business, it was stated, it will not go to the point of defeating the purposes laid down by the decision. It was pointed out that there are a large number of civil cases pending in the courts and that any "concessions" the government made in attempting to interpret the decision, said to be so clear it cannot be misunderstood, might prejudice many of the cases now under judicial review.

When asked if the plans of Secretary Hoover to co-operate with trade associations will be modified, the attorney general said that if he discussed this matter it would be with Hoover only. He said he was sure, however, that Secretary Hoover would pursue nothing but a legitimate policy.

Not to Weaken Government Position

Referring to what he termed the clearness of the Supreme Court decision in the Hardwood case, Daugherty said: "We are compelled to maintain a position which is so fully justified by the decision of the Supreme Court."

The attorney general said that the Department of Justice would not ordinarily interfere with the proposal of Hoover regarding the announcement of a policy, but that he would not state such a policy as coming from the De-

partment of Justice and it was suggested that any statement coming from any other department might weaken the position of the government.

French Tire Manufacturer to Supply Russian Soviet

PARIS, Jan. 1 (By Mail)—The Bergougnan Tire Co. of Clermont-Ferrand, France, has just accepted a contract to supply solid and pneumatic tires to the Russian Soviet government to the value of 793,000 francs. The negotiations were made through a British commercial firm. Terms of payment are cash before delivery.

Three hundred automobile trucks sold by the French Ministry of Reconstruction to a British dealer have been shipped direct to Russia for the use of the Soviet government. The Ministry of Reconstruction, which is now handling practically all that remains of the French army supply of automobiles, had no knowledge that these trucks were intended for resale to Russia. The majority of the trucks were of French construction.

It is reported here, but not confirmed, that the Renault automobile factory in Russia has been sold to a British group.

STANDARDIZING DRY CELLS

WASHINGTON, Jan. 9—Bureau of Standards officials are endeavoring to bring about the standardization of dry cells. Conferences have been held with the manufacturers of batteries and with representatives from the automotive industry, in an effort to determine upon specifications. At the conferences seventeen sizes of the larger dry cells were considered, seven of which were recommended as standard. It is expected that an agreement as to acceptable standards will be reached within a few days.

DECEMBER OUTPUT OF CARS AND TRUCKS REACHED 79,784 TOTAL

NEW YORK, Jan. 11—December production of passenger cars and trucks by all makers is estimated by the National Automobile Chamber of Commerce at 79,784. Reports of December shipments by members of the N. A. C. C. show that they were 105 per cent of shipments for December, 1920, but 19 per cent less than for November. Shipments in November last year declined 14 per cent from the previous month. The shipment figures for the year by months follow:

	Carloads		Driveaways		Boat	
	1920	1921	1920	1921	1920	1921
January	25,057	6,485	29,283	3,185	....	93
February	25,505	9,986	43,719	7,507	....	99
March	29,326	16,287	57,273	9,939	....	75
April	17,147	20,187	64,634	14,197	....	1,619
May	21,977	18,608	74,286	15,193	....	2,381
June	22,516	20,269	60,746	18,834	8,350	3,947
July	23,082	19,470	52,342	15,320	8,702	3,725
August	23,386	20,350	34,060	14,290	7,095	3,565
September	20,804	20,150	24,431	13,550	5,469	3,580
October	17,209	17,323	14,127	11,257	2,519	2,300
November	13,253	14,061	9,497	10,509	659	1,385
December	11,802	12,100	6,469	7,500	89	134

New York Sales Decline in Last Month of Year

NEW YORK, Jan. 10—A falling off in the registrations of new passenger cars in the metropolitan district for the month of December as compared with the preceding month is shown in the figures compiled by Sherlock & Arnold, publishers for dealers of the Automobile Sales Analysis. These figures, however, do not include registrations from Nassau County after Dec. 14, and there are some omissions of new cars in Kings County. Also, on account of some cars being operated on dealers' plates, such registrations have not been included in the December listing.

The summary of the year to date is as follows:

	Approximately below \$2,500	Approximately above \$2,500	Total
January	483	145	628
February	1,408	210	1,619
March	3,396	487	3,883
April	4,811	570	5,381
May	5,466	584	6,050
June	6,522	495	7,017
July	5,457	388	5,845
August	4,255	354	4,609
September	4,004	331	4,335
October	3,505	427	3,932
November	2,425	368	2,793
December	785	126	911
Total to date..	42,517	4,485	47,003

RECEIVER ASKED FOR SWARTZ

INDIANAPOLIS, Jan. 9—Two petitions asking for the appointment of a receiver for the Swartz Electric Co. of Indianapolis have been filed in superior court here. One suit asking for a receiver and judgment was filed by Eli Maybe who claims the company owes him \$1,000. The other, filed by Oliver M. Thornburg, sets out that the company is indebted to him on a \$1,250 note.

Wider Use of Truck Plate Recommended

Standards Committee of N. A. C. C. Submits its Report

NEW YORK, Jan. 11—More general use of the standard caution plate adopted by the National Automobile Chamber of Commerce was recommended by the truck standards committee in a report submitted to the Motor Truck Committee at a meeting here yesterday. The report said:

The Motor Truck Standards Committee has decided that the matter of re-rating the capacity of motor trucks to meet the requirements of those states which plan to enforce their law strictly upon the basis of the manufacturers' rated carrying capacity is one that varies with each individual manufacturer in each state, and indeed, with each individual truck, and is in reality a matter of sales policy with each individual manufacturer rather than a question of standard procedure which can be recommended by this committee:

We feel that it is beyond our province to recommend any such procedure and that the manufacturers' rated capacity is still the most practical basis for classifying motor truck chassis; that the standard caution plate of all motor truck chassis adopted by the National Automobile Chamber of Commerce in 1912 is probably more suitable for present requirements than any other form of plate that could be recommended at the present time. We feel that the present plate permits of furnishing all the weights required by manufacturer, user and Motor Vehicle Commissioner.

We wish to recommend a more general use of this standard caution plate, not only that it should be attached to chassis, but that the space provided for weight should be actually filled in at the time that these weights are actually determined, and that the manufacturer should urge his agents and customers wherever possible to fill in these weights; that the manufacturer should recommend to the State Motor Vehicle Commissioner that no license be issued for a motor vehicle unless the weights are properly filled in upon the caution plate at the time application is made.

We recommend that the motor truck members of the National Automobile Chamber of Commerce should adopt these standards and the recommended practice of the Society of Automotive Engineers wherever applicable.

To Open Publicity Campaign

A resolution was adopted placing the committee on record as fearing that general antipathy on the part of the public towards trucks would result from the fact that the post office department has no contingent fund to meet liability claims for personal injuries caused by postal trucks. The only recourse open at present is to sue the government which is a long drawn out procedure.

A publicity campaign directed to truck owners and operators designed to promote courtesy and civility on the highways will be undertaken by the committee. The first step will be the publication of a booklet. It is felt that if

greater courtesy is shown in the use of highways there will be less general antagonism toward trucks.

Ford Willing to Bid \$11,000,000 for Lincoln

DETROIT, Jan. 12—According to a statement from the executive offices of Henry Ford he will bid as high as \$11,000,000 for the assets of the Lincoln Motor Co. if he is forced to do so at the sale on Feb. 4. The fortunes of the company already are brightening because of his interest in it and the stock has risen several points. It is understood the L-lands will be in nominal control of the factory and that a substantial reduction in the price of Lincoln cars will be made, but the details of Ford's plans in this respect have not been announced.

(Additional details on page 90)

M. A. M. A. Re-elects All Its Directors

(Continued from page 96)

branch, to be known as the Group Department, has been established with Hargrave A. Long as manager.

Long has been secretary and treasurer of the Automotive Wood Wheel Manufacturers Association, which will become the Wood Wheel Group of the M. A. M. A. He also has been secretary of the Hickory Products Association, but will sever his connection with that organization. The headquarters of the Wood Wheel Association have been located in Chicago since 1905. During the war Long, who has been admitted to the bar, was secretary of the Wood Wheel Manufacturers War Service Committee.

In his new position Long will be responsible for developing the group plan of organization which has been taken up by the M. A. M. A. It now includes groups of manufacturers making springs, sheet metal and wheels and the Automotive Electric Association probably will affiliate as a group in the near future.

The Automotive Wood Wheel Association will hold its final meeting as a separate organization here this week. Officers of the group will be elected at that time.

ELIMINATES 33 X 4½ IN. RIM

NEW YORK, Jan. 9—At the instigation of the Tire and Rim Association, the tire executive committee of the rubber committee has concluded to eliminate the 33 x 4½ inch rim as original equipment for motor trucks from the schedule of perpetuated sizes. All interested are to be notified to that effect.

SUNBEAM OPENS BRANCH

NEW YORK, Jan. 12—The Sunbeam Motor Co., Ltd., of Wolverhampton, England, has opened a direct factory branch at 25 West 57th Street, this city, with Dario Resta, famous racing car driver, as general manager. The 1922 chassis will sell for \$6,500.

Body Builders Stage Their First Exhibition

Seventy Displays by Commercial and Passenger Car Companies Are Shown

NEW YORK, Jan. 9—The Automobile Body Builders Association held its first exhibition at the Twelfth Regiment Armory, beginning to-day and continuing to Jan. 14. There were seventy exhibits, one-third of which were by commercial and passenger car body building concerns and the other two-thirds by manufacturers of material going into the manufacture of bodies such as cloth, springs, body irons, plywood, etc. The exhibit occupied the entire floor of the armory.

Admission was by invitation only and the invitations were sent out to those in the trade who might be interested in bodies or body construction.

Body builders represented included H. H. Babcock Co., Bantam Ball Bearing Co., Bender Body Co., Brewster & Co., J. G. Brill Co., Fitzgibbon & Crisp, Highland Body Mfg. Co., Holbrook Co., Hume Body Corp., Martin-Parry Corp., McGuire Convertible Auto Body Co., Metropolitan Body Co., Milburn Wagon Co., Smith Springfield Body Corp., E. J. Thompson Co., Waterloo Body Co., Willoughby Co.

Trade Counts on Price Stabilization, Reports Show

NEW YORK, Jan. 12—Reports made to the directors of the National Automobile Chamber of Commerce at their monthly meeting yesterday showed that the trade generally is counting upon the stabilization of prices between now and the close of the Chicago show. The directors feel that if any price changes are made after Feb. 1 it will be seriously disturbing to what promises to be a good spring business.

A report on the used car survey which is under way shows a tremendous interest in the subject by dealers and manufacturers throughout the country. The N. A. C. C. will welcome suggestions on the subject from anyone who has ideas. Generally speaking, however, the basic thought is that each dealer must solve the problem for himself by "buying them right."

WHITE HAS NEW BUS

NEW YORK, Jan. 11—White Co. is showing at its Long Island City service station a special type of motor bus having new features of design which are important in passenger transportation. The chassis is listed at \$4,400, which includes frame braces and standard equipment. The Model 45 engine, 4½ by 5½ in., is used. Other specifications include a 198-in. wheelbase, four-speed gearset and metal wheels mounted with solid tires.

NOTES GLEANED AT SHOW

NEW SAXON PRESIDENT REMAINS TO BE NAMED

Harry L. Bill, vice-president and general manager of the Saxon Motor Car Corp., will continue to direct the affairs of the company until a successor is named for Clarence A. Pfeffer, who recently resigned as president. The new president will not be appointed until the Chicago automobile show.

THOUGH there is no exhibition of Scripps-Booth cars at the show, the company is continuing production at the Detroit plant until the last of the stock is disposed of. This will probably be worked up early in 1922 and the plant turned over for the manufacture of Buick bodies. Prices on Scripps-Booth are continued as formerly despite the general revisions in all other General Motors lines. The dealer organization will be held intact.

COLUMBIA MOTORS CO. is rapidly expanding its dealer organization and has sent out fourteen more district men in the last few weeks. It is gradually eliminating distributors in the eastern territory, and will have two retail establishments in New York. One of them will be on Broadway and the other in the Bronx.

SINCE the reorganization of the Mercer Motors Co. its sales activities have increased and the company is hopeful of doubling its production in 1922. No price changes are contemplated at this time. The dealer organization is being whipped into shape and the company proposes to have national distribution. The company has made rapid progress in the last five months in liquidating its inventory and soon will be back in the market. Export sales are being pushed as rapidly as possible.

CHARLES B. McLAUGHLIN has been appointed district sales manager of the Handley-Knight Co. He was for many years sales manager of the Willys-Overland branch at Toledo and subsequently was engaged in the distribution of Lincoln cars through northwestern Ohio. The appointment of McLaughlin is in line with the policy of the company to build up the selling organization as quickly as production permits. In the last thirty days many important distributing points have been arranged.

VELIE MOTORS CORP. has expended \$500,000 in the past year in adding to the equipment of its factory at Moline, Ill. Its engine plant at Marion is now in operation. More of this company's dealers than ever before will attend the New York show.

GENERAL Motors Corp. has issued its show brochure, in which it sets forth a series of recommendations governing show procedure. The recommendations are divided

under several heads, describing the manner in which exhibits should be presented, demonstration of open chassis and mechanical parts, handling of show visitors, and other details regarded as important in getting the best results from exhibits. General Motors dealers exhibiting in any show throughout the country will be advised to consult the brochure in making their show plans.

AN eastern sales office for the R. & V. Knight line is being opened by J. M. Ryan in the Gotham Bank Building, New York. With larger schedules the company expects to go more actively after sales in the eastern territory. Ryan has been a member of the factory sales force.

REPRESENTATIVES of the Peerless Motor Car Co. at the show assert that no material changes will be made in the design of the car, for the present at least, but that it is expected sales will be largely increased by means of more intensive effort on the part of the dealer organization. No information is obtainable concerning the Collins car, which it is understood will be brought out by R. H. Collins, who now controls the Peerless company.

WORD has just been received from Clarence L. Thurston, export manager of the Earl and Briscoe lines that he has been ill for some three weeks at Barcelona, Spain. Thurston sailed for England to visit the London show in November and has since traveled in England, France, Holland and Belgium. Officials of the Earl company have been advised that Thurston is rapidly recovering.

British Effort to Import Ford Parts Ends in Court

LONDON, Dec. 30 (By Mail)—The effort by a British company to import Ford parts from the United States and to assemble them in the neighborhood of London in the Whitehead aircraft factory has ended in the bankruptcy court when a deficiency of £51,155 was disclosed. The official receiver reported that in his opinion the company's failure was due to mismanagement and entering into contracts which it had no reasonable expectation of being able to fill.

The plan was evolved early in 1920 by a number of Ford dealers here. J. A. Whitehead promoted the venture through a private company called Amalgamated Motors, Ltd., and was supported by fifteen persons who were to act as distributors for five years and were to pay a deposit of £1 per car. By the means of this levy a sum of £15,605 was subscribed. Ultimately a new company took over the business and arranged with the Gray-Andrews Corp., New York, to collect and ship parts for assembling in England. A few hundred cars were then delivered by the corporation.

Bankers to Change in Granting Loans

Coast Financier Says Past Liberality Has Caused Industry to Suffer

SAN FRANCISCO, Jan. 9—Banks, in the future, will grant credit to automobile concerns in the same manner and by the same methods they now follow in granting credits to wholesale grocers or any other lines of stable business, according to Clare Walker Banta, vice-president of the Wells Fargo Nevada National Bank of this city.

Banta delivered this message to the Santa Clara County Automobile Trade Association, at its meeting at San Jose to which he had been called by invitation from Robert Martland, secretary-manager of the California State Automobile Trade Association, who has been getting bankers and automotive industry men together at similar meetings in California for some months, with excellent results. Banta says:

The automotive industry suffered from the fact that banks had been too liberal with it in "flush" times. Loans were made without thorough investigation, such as would be applied to other businesses. In the very nature of bank credits, loans from commercial funds are quite different from loans made from investment funds.

The first cannot be tied up for any long period, while investment funds may be put into real estate, or bonds or other long-term holdings. Automobile men often fail to appreciate the difference in the nature of these loans in their criticism of the banks. Installment contracts, for instance, should be financed from investment funds, and not from commercial funds.

Although installment payments are legitimate, they have been rather overdone in the automobile business. In the future, one of the added services of the automobile dealers will be to help the customer decide on the best method of making his purchase. Overzealous salesmen have harmed the industry in some cases. If the automotive industry has enemies, there must be a cause for their enmity, for people do not become enemies without reason. By more careful financing, and more careful arrangements with customers, the motor trades should escape any serious financial crisis in the future.

Haynes Prepares Special Advertising for Used Cars

KOKOMO, Ind., Jan. 9—The Haynes Automobile Co. has joined the ranks of manufacturers who are preparing special used car advertising copy for the use of their dealers.

Haynes has prepared a series of 18 advertisements of a confidence building nature, some of which feature the time payment idea. The company offers mats or stereotypes of the advertisements to dealers without charge but dealers are required to assume on their own account the cost of running the advertising in their local newspapers. All the advertisements are built around the legend: "Haynes Rebuilt Cars."

Confidence Shown by Export Managers

Take Up Questions Affecting International Trade at Their Annual Meeting

NEW YORK, Jan. 20—Confidence that the international sale of American made automobiles is again on the increase and that world-wide conditions are shaping themselves for a resumption of such trading, was freely expressed at the annual export managers' meeting held here to-day in the headquarters of the National Chamber of Commerce. In numbers attending, the meeting was described as the largest of its character held by the N. A. C. C. and this was true likewise of the interest displayed and the efforts made to show that the automotive companies of this country are prepared to go ahead with their export business in practically all countries.

Longer Credits Granted

The subjects considered by the speakers and in the discussion give a clue to the problems that the export managers are now seeking to solve. The first of these was finance, with the resultant granting of longer credits to buyers in other countries.

Charles S. Wall, executive secretary of the National City Co. of the National City Bank, of New York, explained to the export workers the manner in which bank acceptances might be used in their trading. Buyers, under this plan, would open letters of credit in this country, on terms up to six months, these accounts being arranged and guaranteed through the proper banking channels. Manufacturers, on making shipments, would draw on the American bank holding the letter, discounting this draft at the prevailing rate whenever they desired to do so.

Great Possibilities Exist

The relations of the manufacturers and exporters with their dealers in other countries were a prevailing theme of the meeting. From the opening talk by Walter S. Drake, the chairman, and Gordon Lee, chief of the automotive division of the Bureau of Foreign and Domestic Commerce, to the closing remarks by L. J. Ollier of Studebaker and R. J. Archer of Willys-Overland, the exporters were warned that they must build up confidence in American products through fair dealing and just treatment of their distributors abroad, many of whom are business men of a high caliber, loyal to the firms they represent.

"No matter what competition we may have and what difficulties may confront us in the world-wide markets, if we build up confidence in our dealings and confidence in the American automotive products, all these problems will take care of themselves," Ollier said. "We haven't begun to scratch the surface of the infinite possibilities for the international

sales of automobiles."

The plan for forming an export combine of N. A. C. C. members, under the Webb-Pomerene act, was outlined by George F. Bauer, secretary of the foreign trade committee, and a committee to consider its adoption was decided upon. This committee, it is understood, will be headed by A. S. Moore, president of the Denby Motor Truck Co. Details of the plan are given elsewhere in this issue of AUTOMOTIVE INDUSTRIES.

Lee told of the work that is being done by the new division of the Commerce Bureau, requesting that manufacturers keep more closely in touch with it, and assuring that the division would seek in every way to do whatever was needed to build up export sales. A resolution commending the division was adopted.

The furtherance of road building efforts throughout the world was also a topic for discussion, this being the subject of talks by Thomas H. McDonald, chief of the Bureau of Public Roads, and S. T. Henry of the Allied Machinery Co. They counseled the exporters to get behind all road improvement campaigns.

Budd Wheel Wins Its Suit on Socket Punching Patent

NEW YORK, Jan. 9—The Federal District Court at Richmond, Va., has decided against the Wire Wheel Corp. of America in its suit against the Budd Wheel Co. and also against the defendant on a counterclaim. The suit was based on the Pugh patent No. 1,030,428, which covers the punching of rim sockets in wire wheel rims. In reference to one contention the court held that the defendant was not infringing inasmuch as it had eliminated one step in the operation. On a second claim the court held that if it accepted the plaintiff's view the device would not have been patentable as it was covered in the old Frayer racing cars of 1905 and 1906.

The counterclaim was based on the reissue of the Lindsay patent No. 14,461 covering a demountable wheel with a special type of axle. It was held that this was no invention over the earlier British patent to Pugh.

ORGANIZE TO MAKE "ASH" WHEEL

NEW YORK, Jan. 10—American Car & Foundry Co. has organized an automotive wheel division for the manufacture of disk and wire wheels for passenger cars, and a line of wheels for trucks, in the Russell Avenue plant, Detroit. The wheels are the design of C. S. Ash and will be known as Ash wheels. Ash will be in general charge of manufacturing and merchandising the product.

83,349 CARS IN SOUTH CAROLINA

COLUMBIA, S. C., Jan. 7—During the past year South Carolina had 83,349 automobiles and 7197 motor trucks, as compared with 93,843 automobiles and trucks in 1920, according to L. H. Thomas, secretary of the State Highway Commission.

Dealer Meetings Held During Week

Used Car Situation Taken Up— Company Conditions Discussed by Executives

NEW YORK, Jan. 11—Stern measures to meet the used car situation were urged by C. W. Nash, president of Nash Motors Co., in an address to his dealers at the annual show week meeting to-day. It is far better to be content with lean pickings for a time, he said, than to be out of business when the day of good things returns.

A statement by J. J. Storrow, chairman of the Nash board, showed the company entering 1922 with an inventory of \$2,600,000 which he said was susceptible of being turned over six times with fair business. He urged the dealers to get behind the factory organization and predicted that through real intensive effort the company could be brought from seventh to fourth place in the industry.

Velie Organization Meets

F. E. Bradfield, vice-president of Velie, was the principal speaker at the annual dinner to Velie dealers held in the Astor. His talk dealt with the new models which the company has brought out for 1922 and an explanation of the new power plant which was exhibited. Through the new co-operative finance plan which the company has fostered he said the work of selling would be greatly lightened and he predicted the greatest of Velie years.

Paige-Detroit Motor Car Co. will hold its dealer meeting and luncheon at the Commodore Thursday at which the new Jewett car will be first exhibited. The Hupp dinner and meeting, Willys-Overland and Grant will also be held at the Commodore Thursday. Studebaker dealers will meet in the Plaza and Auburn dealers in the Waldorf.

Olds Has Dinner

NEW YORK, Jan. 12—The Olds Motors Works is committed to a policy of continuing to handle its products through distributors and to this end is strengthening its dealer organization throughout the country, particularly in cities having a population of more than 5000. President A. B. A. Hardy told 400 eastern Oldsmobile dealers gathered together at their annual dinner at the Commodore Hotel last night. Pierre S. duPont, president of General Motors Corp., addressed the dealers, urging closer co-operation between them and the factory. Remarks were made by a number of factory executives and distributors.

NEW DIAMOND TIRE

AKRON, Jan. 9—The Diamond Rubber Co., Inc., has added a new cord tire to the Diamond line. The new design tread is said to have special road gripping power against both side, forward and back skidding.

Farmers' Meetings to Consider Trucks

Agricultural Conference Will Take Up Matter of Expedit- ing Product Deliveries

WASHINGTON, Jan. 11—Questions of expediting delivery of farm products through the extension of motor vehicle service from farm-to-market will be one of the topics on the program of the national agricultural conference here beginning Jan. 23. Representatives of the automotive industry probably will be named by the Department of Agriculture within a few days to serve as advisors on highway transport. The entire industry will be vitally affected by the outcome of the meetings as the farmers are the best prospects at the present time.

The conference will consider farm problems in their broadest aspect both from domestic and international viewpoints. It is possible the whole course of congressional action as it relates to agricultural interests will be based upon the findings of the various committees. The deliberations will be based largely on the findings of the Joint Congressional Commission of Agricultural Inquiry which has urged the economic value of motor trucks on the farm. This report is said to be one of the most valuable ever made by a governmental body.

One of the subjects to be given careful consideration is that of transportation in which motor vehicles play so large a part. Inasmuch as the recovery of the automotive industry depends largely upon agricultural markets, it has a vital interest in the conference.

Sale of Severin Stock on Coast Investigated

OAKLAND, CAL., Jan. 9—Erwin C. Easton, acting commissioner of corporations, is investigating the sale of \$25,000 worth of stock in the Severin Motor Car Co. of Kansas City by H. T. Severin, president.

Severin came to this city in July proposing to move the Kansas City plant to Oakland and asking permission of the commissioner of corporations to sell stock in the company in order to pay for the transfer of the plant and a number of completed automobiles. Severin was informed that, on the deposit of \$45,000 in a national bank, as a guarantee, he would be given a permit to sell the stock. It is asserted that he promised to deposit this guarantee, but failed to do so, and, according to the charges made against him, on Jan. 4 proceeded to sell some \$25,000 worth of stock, the sales being made largely among wealthy people residing in Piedmont and Berkeley.

Severin's plan was to incorporate his company under the laws of California. Three local attorneys were made dummy directors, C. R. Morse, L. Elrod and E. E.

Keyes, to whom it is asserted blocks of stock were issued by Severin, on the understanding that they were to act as his attorneys and advisers in the incorporation of the company.

In a statement issued by Keyes, some \$10,000 worth of Severin automobiles are clear of incumbrance, and these have been attached in an effort to recover the money expended by the attorneys, and to reimburse, in part at least, the purchasers of stock.

Departments Readjusted by Bridgeport Brass Co.

BRIDGEPORT, CONN., Jan. 9.—Important executive changes have been made in the Bridgeport Brass Co., these being largely a readjustment of various heads of departments.

Walter B. Clark, who has been works manager of the mills product division, is made general works manager of the entire plant. This position is similar to the one that has been occupied by William R. Webster, vice-president of the concern.

Arthur Brewer, chief engineer, is made works manager of the mills products division. The plant engineering and maintenance department will be known as the plant engineering department and supervisor of maintenance. E. R. Feicht is in charge. G. E. Oakley, who has been assistant sales manager of the fabricating department, has been made sales manager. Warren D. Blatz is made general sales manager of the entire corporation.

The process engineering department is absorbed by the research engineering department and comes directly under the supervision of vice-president William R. Webster. The cost accounting department is temporarily in charge of Paul Swartz of the R. G. Rankin Co., until the work of installation has been completed.

A. A. A. Takes Action on Highway Problems

NEW YORK, Jan. 11—The executive board of the Automobile Association of America at a meeting to-day approved the recommendation of Detroit and Jacksonville conferences for a Federal appropriation of \$100,000,000 for national highways, and will urge speedy action by Congress to meet highway needs. The money is to be expended over a period of years. Other recommendations were likewise approved.

Ten delegates will be appointed to the American Good Roads Congress meeting in Chicago next week. Recommendation was made that a delegate be appointed to attend a good roads congress to be held in Seville, Spain, in 1922, to illustrate the development of American highways. The project to erect a tri-state bridge at Cairo, Ill., was approved as important to trans-continental travel. The annual meeting was fixed for the latter part of May in Washington.

City Sales Keep Up Throughout Georgia

Recent Price Reductions Stimu- late Trade—Smaller Counties Show Decrease

ATLANTA, Jan. 10—While the state automobile department issued but 134,453 licenses for automobiles and motor trucks during 1921, or more than 20,000 less than were issued in 1920, inspection of the records of the last two months of the year indicates that sales held up fairly well in November and December as compared with most of the other months.

In virtually all counties of the state in which the larger cities are located there was an increase in licenses issued during the year as compared with 1920, and an increase in fees collected. These increases were offset, however, by material decreases in the smaller counties.

Recent reductions in Buick, Cadillac, Hudson and Essex prices have served to stimulate sales of these cars to some extent, the local distributors reporting a number of advance orders for delivery upon the lower prices going into effect. Ford car and truck sales have held up unusually good the last three months.

The outlook for the present year seems to portend a revival of buying by spring in the larger centers, but little or no improvement in the smaller communities before the next crop is gathered.

The tractor outlook over the south-east is fairly good, especially for industrial sales and in the timber tracts where operations are being resumed on a broad scale.

Emerson Motors Crops Up in Pelletier Proceedings

BOSTON, Jan. 9.—Testimony that District Attorney Joseph C. Pelletier dropped threatened criminal prosecution against the Emerson Motors Co. of New York after counsel for that company had paid \$20,500 fees to Daniel H. Coakley, a Boston lawyer in an effort to avert prosecution, was offered in Supreme Court at the trial of Pelletier on charges of misconduct.

The Emerson case was investigated by the Boston Bar Association, which afterward presented the matter to the attorney general. The specification contains five counts and alleges that the district attorney conspired with Oakley by threatening the company with prosecution and thus coerced the company into paying the fees to Coakley for "averting the prosecution."

In June, 1918, promoters of Emerson Motors were convicted of using the mails to defraud in connection with the sale of stock and three of them, Nicholas Field Wilson, Robert T. Matches and William Loomis, were given prison sentences.

MEN OF THE INDUSTRY

R. V. Rowan has been appointed supervisor of branches of the Pilot Motor Car Co. with headquarters at Richmond. He acted in a similar capacity with the Buck Co., Studebaker distributor for the Cleveland district and Indianapolis. D. H. Cummins, former president of the Lorraine Car Co., is now Pacific coast representative for the Pilot with headquarters at Los Angeles. T. L. Bayne, who was with Lorraine when Pilot took over the business, is service engineer; William H. Conklin, former Lorraine sales manager, is now manager of the hearse department of the Pilot company.

W. C. Starkey has been made vice-president and director of engineering of the Stevenson Gear Co., Indianapolis, and will take over the works management of the company's plant. Starkey has been identified with the Ohio Brass Co. of Mansfield, Ohio, for sixteen years and resigned his position as chief engineer and works manager of that concern to make the new connection.

Albert J. Roemer, formerly in charge of sales in the upper New York district for the Multibestos Co., has been appointed district manager for Metropolitan New York with offices at 105 West 63rd Street. G. A. Watson, formerly sales manager for the Western Motor Supply Co. of Minneapolis, has joined Multibestos as district manager in charge of sales for Iowa and Nebraska.

Harry C. Maley has sold his interest in the Albee Corp. and now is operating an advertising and merchandising business in Chicago under his own name. Maley was identified with the early advertising of the Buick Motor Car Co., the Oakland Motor Car Co., the Champion Ignition Co. and the Sheridan Motor Car Co.

George W. Cushing has resigned as advertising manager of the Hudson Motor Car Co. and Essex Motors to become affiliated with Barton, Durstine and Osborn, Inc., an advertising agency, and will be located in the Buffalo office. Cushing at one time served as advertising manager of the Federal Motor Truck Co.

Charles W. Mears has retired from the Mears-Richardson-Briggs Co., advertising agency, Cleveland, having sold his interests to the other members of the firm on a contract omitting his name from the corporate title. His resignation as president and treasurer became effective Jan. 6.

W. H. Girdlestone, formerly sales manager of the eastern district of the Splidorf Electrical Co., has joined forces with H. B. Shontz Co. as sales manager in charge of battery and electrical service station equipment. Girdlestone has been connected with the industry for twenty years.

Herbert B. Fitch has been appointed manager of the branch of Willys-Overland, Inc., at Boston, succeeding W. G. Northrup. Fitch has been identified with the Overland organization for many years, being at one time secretary to John N. Willys.

Wallace C. Hood has returned to the King Motor Car Co. as director of sales after an absence of several years. He was associated with King in 1917 and 1918. Benjamin Stevenson, formerly with Winton Co., is now factory manager for King.

Henry T. Myers, New England branch manager of the Studebaker Corp. with headquarters in Boston, has become vice-president and general manager of the A. W. Halle

Motor Co., Studebaker distributor in western New York.

F. W. Wytosk, recently connected with the Nordyke & Marmon Co. and for twenty years connected with the automotive industry in the engineering field, has become associated with the Checker Taxi Cab Co. of Chicago.

George L. Booker, former president of the F. B. Stearns Co., New York distributor of the Stearns, who has been appointed general sales manager of the F. B. Stearns Co., Cleveland, will assume active duties on Feb. 15.

Frank F. Kolbe, for some time in charge of the New York office of the treasurer's department of General Motors Corp., has been appointed an assistant treasurer of the corporation with headquarters in New York City.

Herbert L. Jandus, formerly with the Standard Parts Co., has joined the engineering staff of the C. G. Spring Co. He will specialize in the production of bumpers and assist in the development of that department.

Ray F. McNamara, experimental engineer with the Maxwell Motors Corp., has reconsidered his decision to join the Rickenbacker Motor Car Co., and will continue his connection with the Maxwell interests.

Thomas J. Little, Jr., formerly directing experimental and development engineering of the Cadillac Motor Car Co. and the Lincoln Motor Co., has opened consulting engineering offices in Detroit.

Socrates X. Newman, formerly salesman of the Automatic Safety Tire Valve Co., has been appointed director of sales of the Edward V. Hartford, Inc., 35 Warren Street, New York City.

H. D. Little, formerly in the wholesale department of Willys-Overland, Inc., has been appointed divisional sales agent of the Handley-Knight Co., covering the central states.

Many Factory Executives
Attend Show in New York

(Continued from page 99)

ing agent; Earl Jacks, engineering and service departments.

Sun—A. H. Wyatt, president; M. H. Ayre, factory representative.

Templar—M. F. Bramley, president and general manager; Paul E. Ryan, general sales manager; A. M. Dean, chief engineer; Morris Bleiweis, assistant sales and advertising manager.

Velle—F. E. Bradfield, vice president; W. L. Velle, Jr., secretary; T. G. Gannon, sales manager; H. T. Wheelock, advertising manager.

Westcott—B. J. Westcott, president; H. G. Root, general manager; E. H. Gilcrest, sales manager.

Bank Takes Judgment
on Notes for \$23,000

TOLEDO, Jan. 9.—The Old National Bank of Lima has taken judgment on two notes for approximately \$23,000 against B. A. Gramm, vice-president of the Gramm-Bernstein Motor Truck Co., and his wife. The action followed the refusal to post more security for the notes or give a mortgage on their home.

Max Bernstein, president of the company, on Dec. 30, placed a mortgage on his business block located at Lima for \$140,000.

Casing Production
Decreased 175,000

November Output Totals 1,756,555—Inner Tube Production Shows Decline

NEW YORK, Jan. 6.—A decrease in production of pneumatic casings is reported for November by the Rubber Association of America. The decline, however, is only about 175,000 with a total output of 1,756,555. The falling off in shipments was from 1,675,169 in October to 1,342,519 in November and inventories increased from 3,545,030 in October to 3,908,342 in November.

Shipments Lower

Production of inner tubes declined from 2,843,918 in October to 2,126,211 in November. Shipments fell off from 2,016,371 in October to 1,540,299 in November. Inventories increased from 4,732,016 in October to 5,203,568 in November.

Detailed figures as compiled by the association are as follows:

PNEUMATIC CASINGS			
1920	Inventory	Production	Shipments
Dec.	5,508,380	506,111	1,327,153
1921			
Jan.	5,319,605	703,430	965,417
Feb.	5,193,018	819,892	1,073,756
Mar.	4,597,103	1,163,314	1,614,651
Apr.	4,527,445	1,651,418	1,785,961
May	4,451,668	2,100,917	2,085,882
June	4,154,456	2,313,265	2,643,860
July	3,892,037	2,570,524	2,757,581
Aug.	3,934,853	3,043,187	2,894,442
Sept.	3,340,798	1,929,268	2,047,929
Oct.	3,545,030	1,928,271	1,675,169
Nov.	3,908,342	1,756,555	1,342,519

INNER TUBES			
1920	Inventory	Production	Shipments
Dec.	5,786,929	508,446	1,481,285
1921			
Jan.	5,586,163	740,824	1,042,617
Feb.	5,415,464	916,627	1,129,381
Mar.	5,044,861	1,346,483	1,643,690
Apr.	4,916,772	1,762,122	1,983,571
May	4,751,880	2,210,040	2,342,567
June	3,835,098	2,359,928	3,232,673
July	3,122,815	3,020,981	3,603,248
Aug.	3,649,319	4,430,152	3,804,060
Sept.	3,827,830	3,274,822	2,645,758
Oct.	4,732,016	2,843,918	2,016,371
Nov.	5,203,568	2,126,211	1,540,299

SOLID TIRES			
1920	Inventory	Production	Shipments
Dec.	303,473	16,297	40,828
1921			
Jan.	303,753	21,220	29,116
Feb.	304,374	23,365	29,599
Mar.	283,800	28,710	43,926
Apr.	269,985	28,859	42,080
May	264,633	35,156	40,122
June	240,336	28,395	49,867
July	220,003	35,123	55,678
Aug.	216,367	55,694	66,866
Sept.	161,832	37,441	50,276
Oct.	163,299	46,274	45,911
Nov.	173,451	43,537	34,566

Explanatory Notes

"Production" and "Shipments" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" include only stock forwarded to a purchaser and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

FINANCIAL NOTES

Goodyear Tire & Rubber Co. had over \$25,000,000 cash and cash items on its balance sheet Nov. 30, 1921, according to H. H. Springfield, assistant to the president. There were no bank notes on that date and current assets were valued at \$63,986,387, against current liabilities of \$5,441,512. The general balance sheet on the above date shows excess current assets over current liabilities of \$58,544,875 or more than \$1,000,000 in excess of the \$57,000,000 aggregate bonds and debentures of the company at present outstanding. The assets include inventories, \$30,521,041; accounts and notes receivable, \$7,069,487. Included in the liabilities are trade accounts and notes payable, \$4,482,864; reserve for possible loss on rubber and fabric, \$1,862,041; for contingencies and Federal taxes, \$4,726,477 and surplus of \$2,862,492.

Kelly-Springfield reports earnings for the year, before taxes of \$4,000,000, which will be written off to cover the unusual expenses of getting the new Cumberland plant into production. Cash on hand approximates \$2,000,000 and only current liabilities against it. There are no bank loans. Inventories stand on the books at figures well below present replacements for rubber and fabric. There is no considerable accumulation of finished goods. The Cumberland factory is running at the capacity of that part which has been brought into production.

United States Automotive Corp. issue of \$1,750,000 first mortgage 8 per cent ten-year bonds has been sold to Harvey Fisk & Sons, Inc., and will be offered within the next few days at 99½ to yield slightly more than 8 per cent. The bonds are part of an authorized issue of \$3,000,000 and are redeemable after Sept. 1, 1924, at 107½ and thereafter at 105. They are convertible into Class "A," common stock of the company, at a ratio of one share of stock for each \$100 principal amount of bonds.

Maguire Tire & Rubber Co. has been incorporated in Delaware by former interests of the Portage Tire & Rubber Co. with \$1,000,000 8 per cent preferred stock, \$3,600,000 "A" common (par \$10) and \$400,000 "B" common (par \$10). The preferred stock and "A" common will be publicly offered at par. The president is J. W. Maguire; vice-president and treasurer, James Christy, and secretary, J. A. Elden. It is said that the company will purchase one or two Ohio plants.

The White Co. indicates that its inventories at the beginning of the year have been reduced from \$7,200,000 to \$3,600,000. Cash on hand is expected to approximate \$1,250,000; current receivables, \$5,500,000; account and sundry payables, \$2,400,000, giving a ratio of current assets to current liabilities of about four to one, compared with three to one a year ago. Sales aggregated 53 per cent of 1920, with orders approximately 60 per cent of 1920 bookings.

Duplex Truck Co. of Lansing balance sheet for the year ended Oct. 31 shows current assets of \$910,522, of which inventories make up \$635,876; capital assets, \$626,784; deferred charges, \$7,428. Current liabilities total \$419,636, divided as follows: Accounts payable, \$8,085; notes payable, \$409,712; accrued payrolls, \$1,562; excise taxes, \$276. Reserves total \$14,711; capital stock, \$1,000,000, and surplus, \$110,387. In 1920 the company sold 600 trucks, it is stated.

B. F. Goodrich Co. entered the new year with no bank indebtedness. At the beginning of 1921 notes payable aggregated

\$29,000,000. Inventories, which at the end of 1920 exceeded \$72,600,000, were cut nearly in half, to \$38,295,000 as of Sept. 30 last.

Phoenix Rubber Co. receiver and creditors have agreed that \$200,000 new capital must be raised by the issuance of bonds or liquidation must take place. The assets are estimated at \$700,000 and liabilities \$350,000.

Allen Motor Co. receivers state that a \$670,000 offer has been made for the company's assets. Claims against the company are estimated at \$3,000,000, including \$1,000,000 contingent.

Kalamazoo Motors Corp. is offering \$250,000 of first mortgage 7 per cent bonds maturing in five years, to obtain capital required for an expansion of business.

United States Rubber Co. has declared its regular quarterly dividend of \$2 a share on preferred stock, payable Jan. 31 to stock of record Jan. 16.

Moon Motor Car Co. declared its regular quarterly dividend of 1½ per cent on preferred stock outstanding, payable Jan. 1.

Takes Steps to Hold Up
Scripps-Booth Program

DETROIT, Jan. 10—An appeal to minority stockholders of Scripps-Booth Corp. is being made by A. M. Smith of Chicago. Smith asks stockholders to forward name, address and amount of holdings "so that we can make a program and bring pressure to bear upon officials or cause such investigation and forced action to be taken as will put the company back in its proper position as a profitable investment." General Motors, which is liquidating Scripps-Booth, held 90 per cent of outstanding 60,000 shares of stock at last report.

In Attorneys' Hands

NEW YORK, Jan. 10—Comment on the steps taken by minority stockholders of the Scripps-Booth Corp. to hold up the dissolution program was refused at headquarters of the General Motors Corp. here. It was stated that the subject was in the hands of the corporation's attorneys.

Sales Managers Have Plan
for Selling Used Trucks

PHILADELPHIA, Jan. 9—In accordance with the plan outlined at the December meeting of the Motor Truck Association of Philadelphia, a gathering of sales managers of member concerns was held in the quarters of the Philadelphia Automobile Trade Association, to discuss ways and means of solving the problem of the resale prices of used trucks. Charles F. Woltz of the Packard Motor Car Co. of Philadelphia presided as chairman.

The thoughts expressed at this meeting were reported to a session of the board of governors of the association, who were sufficiently impressed with the details of the sales managers' suggestions to call a meeting of the association membership for a date, toward the end of January, yet to be fixed. At this time the ideas offered by the sales managers will be reviewed and action upon them may be taken.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES by the Guaranty Trust Co., second largest bank in America.

A much easier tone was noted in the money market of the past week, rates for call money ranging from 3½ per cent to 5½ per cent as against 4½ per cent to 6 per cent in the previous week. On Monday of this week the rate went to 3 per cent, which is the lowest since November, 1919. For fixed date maturities the undertone was also easier, and the quotations for all maturities from 60 days to 6 months were 4¾ per cent to 5 per cent as compared with 5 per cent to 5¼ per cent in the previous week.

The 4¾ per cent rate is the lowest quotation for time loans since Sept. 4, 1917. Prime commercial paper rates were also lowered to 4¾ per cent to 5 per cent, as against 5 per cent to 5¼ per cent. Bankers' acceptances in the open market eligible to rediscount at the Federal Reserve Bank declined from 4½ to 4 per cent. A large supply of money and a fair volume of transactions were reported.

During the past week an event of world-wide interest and importance was the call issued for an economic conference to be held in Genoa in March, the results of which it is hoped may be as far-reaching as those of the Washington Conference apparently have been.

The total reserves of the New York institution increased \$4,931,000, while total bills on hand declined \$3,000,000. Total earning assets showed a decrease of \$6,232,000, and total deposits an increase of \$31,472,000.

The Federal Reserve statements as of Jan. 4, 1922, showed an increase of \$17,602,000 in total reserves, of which gold reserves constituted \$5,698,000. Total bills on hand decreased \$54,641,000.

Early this week the Dallas and Minneapolis institutions reduced their rediscount rate on all classes of paper from 5½ per cent to 5 per cent.

Late week Canadian exchange touched a new high level at 95.5 per cent as against a low of 84.9 per cent for the year 1921.

New Paige Contract Calls
for Special Service Man

DETROIT, Jan. 9.—Under the terms of the new Paige contract, distributors are required to add a special service man whenever the factory may consider it necessary to relieve some particular trouble which dealer service men are unable to meet successfully. Such a man would work with the factory service man in the territory instructing the general service men in the way to meet the difficulty.

Dealers are urged in letters accompanying the contracts to do everything in their power to make pleased owners, even to the extent of offering special services such as monthly inspections, grease and oil service for stated periods.

INDUSTRIAL NOTES

Goodyear Tire & Rubber Co. reports increases in production in its California and Canadian subsidiaries similar to those being made at Akron. The Los Angeles plant started the new year with a production ticket of 2,500 compared with 2,000 during December. The Canadian plant will probably increase to 2,000 tires a day from 1,500 during the next few weeks. The Canadian plant is largely dependent upon export business and some betterment is noted by officials in the general situation.

L. H. Gilmer Co. has elected the following officers: Vice-president and general manager, John S. Krauss, who has been treasurer; Joseph S. McCulloch, president of the Union National Bank and a director of the company, treasurer to succeed Krauss. Walter Rossmassler, treasurer of Sauquoit Silk Co., and William B. Reed, treasurer of the Budd Manufacturing Co., were named as new members of the board of directors.

Wayne Oil Tank & Pump Co. will erect a \$75,000 office building in Fort Wayne and will convert the present office section into an addition to the factory. Experimental and research laboratories will occupy part of the shop space. A portable steel warehouse is included in the company's plans for expansion.

Pioneer Instrument Co., Brooklyn, has taken over the manufacture and sale of the K-L fuel system formerly handled by the K-L Automotive Specialties Co. C. B. Kirkham will continue to supervise the engineering work in connection with the apparatus and its installation.

Lehigh Tire & Rubber Co., New Castle, Pa., has elected the following officers: President and treasurer, H. W. Smith, who is the general manager; vice-president, Norman A. Martin; secretary, J. F. Selberling. Production of a new patented tire is expected to begin March 1.

Franklin Automobile Co., Syracuse, reports that 8,545 cars were shipped during 1921, which was 81 per cent of the number shipped during 1920. Of the shipments 52 per cent were closed cars. This represents an increase of 7 per cent over the previous year.

American Motors Service, Pittsburgh, has been organized by G. Earle Burroughs, I. V. Conneely and other associates in Cleveland, Toledo and Detroit for the purpose of selling direct automotive equipment for complete private garage outfitting.

Hart-Parr Co. has resumed operations after a partial close down. About 25 expert erectors and mechanics have been called back for work. It is stated at the factory that an order for tractors has just been received from France.

Willys Corp. Fostoria plant, which was closed for ten days for inventory, has reopened and will probably increase its working force within the next few months. Sixty men were placed at work when the plant reopened.

National Mas-Core Motors Corp., Kalamazoo, has received an order from the Checker Taxi Cab Co., Chicago, for 1,800 motors. Production is to start immediately.

Metal Specialties Mfg. Co., Chicago, has added to its line the Jorgensen vapor primer, formerly manufactured and marketed by the Jorgensen Manufacturing Co., Waupaca, Wis.

C. G. Spring Co., Kalamazoo, has rearranged its entire bumper unit and placed its machinery to increase the production greatly without requiring additional help.

Gibbons Bros., Ltd., Dudley, Worcester-shire, England, has been appointed British Isles representative for W. S. Rockwell Co.

Hoover Wagon Co. has changed its name to the Hoover Body Works. It is proposed to open a branch plant in Long Island City.

Buick Motor Co. plants at Flint, which were closed for inventory taking on Dec. 23, resumed work in all departments Jan. 9.

New York Capitalists
Will Produce Standard

NEW YORK, Jan. 9.—The automobile branch of the Standard Steel Car Co. has been taken over by a syndicate of New York capitalists headed by Don C. McCord, who has been vice-president of the Bankers' Commercial Security Co. Associated with him are the New York Trust Co., the Liberty Industrial Corp. and individuals connected with the Standard Steel Car Co.

The Standard car will be manufactured by a new company to be known as the Standard Motor Car Co. of Pittsburgh. The present factory will be used until it is outgrown by production. McCord has resigned from the Bankers' Commercial Security Co. to become vice-president and general manager of the new corporation.

The purchase does not include the Vim motor truck, which was taken over by the Standard Steel Car Co. several months ago. The truck interests have been sold to a group of men headed by a former Vim dealer in Baltimore.

Stockholders Ask Receiver
for Burdick Tire Co.

INDIANAPOLIS, Jan. 9.—A receiver for the Burdick Tire & Rubber Co., a Delaware corporation having a branch at Noblesville, Ind., was asked in a complaint filed here in federal court by Calvin C. Miller and Joseph Lowman of Preble County, Ohio, stockholders, on behalf of themselves and other stockholders in the concern. In addition to the company, the defendants named are H. G. Steinbrenner, of Huntington, Ind., president, R. E. Rice and Henry Deck of Noblesville, and Charles R. Haller of Huntington, directors. The complaint charges that the defendants and others have made false and fraudulent representations in the sale of company stock.

The company was incorporated in March, 1917, with a capital stock of \$1,000,000, which was increased in 1920 to \$5,000,000. There is a large factory and power house at Noblesville which the plaintiffs claim has never been fully operated in the making of tires and tubes, and which under present circumstances, it is claimed, they will be unable to operate. The complaint states that in June, 1921, the officers and directors delivered to the Fort Dearborn Trust and Savings bank of Chicago, a mortgage to secure the issue of \$250,000 in bonds of the company.

METAL MARKETS

CHEERFULNESS has full sway in the steel market, and even those producers who were timid lest the first half of January turn out to be another period of "watchful waiting" are pleasantly disappointed. Automotive purchasing agents have anticipated much of the buying which sellers did not look for to materialize until after the automobile show. What orders have been placed are not of the spectacular sort.

In this connection it may be stated that the same statistical source which a year ago placed the consumption of rolled finished steel by the automotive industries at 3.5 per cent in striking a balance for 1921 accords to the automotive industries the distinction of being the second largest domestic consumer, automotive steel purchases in 1921 being placed at approximately 10 per cent of the total steel production. All signs point toward a continuance of the predominant position of automotive demand in the next few weeks.

Aggregate bookings of automotive sheet orders for shipment over the next four weeks have been sufficient to diminish the anxiety of many rolling mills regarding their rate of January and February operations. Full-finished sheets in particular have come in for considerable attention and, as a reflex of the improved situation in the sheet market, that for sheet bars has grown firmer. The chief interest now quotes \$30, having booked a very fair tonnage at that price level, although some of the "independents" are reported to be still amenable to bids of \$29.

Effective Jan. 1, the leading interest lowered its quotation on cold-rolled strip steel to 3.50c., the 3.75c. quotation having long ago become obsolete. While quite a few routine orders for cold-rolled strip have been placed in the last few days, most buyers are apparently waiting to see if the 3.50c. price level will become bottom or whether "independents" will shade this figure on attractive tonnages.

Pig Iron.—A much broader demand is in evidence, especially for malleable, of which some of the automotive foundries in the Middle West are seeking sufficient tonnages to cover their wants for the first half of the year. Most of the sales, however, are for from 125 to 300 tons, and taking the pig iron market as a whole it may be said that buyers' price views are usually \$1 below sellers' asking prices.

Steel.—Orders have been and continue to be placed for modest tonnages of all sorts of steel products, none of the tonnages placed exceeding requirements over the next few weeks. This aversion to commitments beyond the next four weeks is in part due to conservatism and in part to the hearings scheduled for this month before the Interstate Commerce Commission regarding reductions in freight rates on steel commodities.

Aluminum.—The general expectation in the trade is that automotive users will place orders more liberally after this week, when production schedules of builders of higher-grade passenger cars may be expected to be ready. Rumors of odd lots of imported metal being offered at sacrifice prices have been current, but contracts could hardly be placed at below 17.50c. for virgin ingots, 98 to 99 per cent duty paid. Sheets are in fair demand.

Copper.—The stage appears to be all set for a further fractional advance in copper prices when the opportune moment arrives.

Calendar

SHOWS

- Jan. 7-13—New York, National Automobile Show, Grand Central Palace. Auspices of N.A.C.C.
- Jan. 9-14—New York, Motor Car Body Exposition, Automobile Body Builders Association, Twelfth Regiment Armory.
- Jan. 28-Feb. 4—Chicago, Automobile Salon, Hotel Drake.
- Jan. 28-Feb. 4—Chicago, National Automobile Show, Coliseum, Auspices of N.A.C.C.
- Feb. 6 to 11—Seventh National Tractor Show and Educational Exposition, Minnesota State Fair Grounds, Minneapolis.

Feb. 6 to 11—Winnipeg, Can., Automotive Equipment Show, Western Canadian Automotive Association.

FOREIGN SHOWS

- March, 1922—Santiago, Chili, Annual Automobile Show.
- April 16—Mexico City, Annual Automobile Show, Auspices of the Automotive Division of the American Chamber of Commerce.
- April 22-May 1—Prague, Czechoslovakia, Fourteenth International Automobile Exhibit.
- May, 1922—Quito, Ecuador, Agricultural Exposition, celebrating Centenary of Ecuador. Automotive Section.
- Sept. 1922—Rio de Janeiro, Brazil, Automobile exhib-

its in connection with the Brazilian Centenary Associao Automobilista Brasileira.

CONVENTIONS

- Jan. 17-20, 1922—Chicago, American Road Builders Association.
- Jan. 30-31—Chicago, Fifth Annual Convention, N. A. D. A., La Salle Hotel.
- Jan. 30-Feb. 2—Boston, Sixth Annual Conference of the International Delivery Association, Copley Plaza Hotel.
- May 10-12—Philadelphia, Ninth National Foreign Trade Convention of the National Foreign Trade Council.

- June 11-15—Milwaukee, Annual International Convention of the Associated Advertising Clubs of the World.
- Sept. 18-23, 1922—Rome, Italy, Second Annual Meeting of the International Chamber of Commerce.

S. A. E. MEETINGS

- Detroit, Feb. 24, Mar. 24, April 28, May 26.
- New York, Jan. 10-13, 1922—Annual Meeting.
- New York, Jan. 16, First Annual Meeting of Advisory Board on Highway Research, Engineering Societies Building.
- Chicago, Feb. 1
- Minneapolis, Feb. 8-9—Annual Tractor Meeting.

Excise Tax Change Hangs on Bonus Bill

Hanch Confers With Washington Officials on Manufacturers' Sales Levy

WASHINGTON, Jan. 11—Survey of the tax situation shows that the repeal of certain excise taxes depends almost entirely upon the form taken by the proposed soldiers' bonus bill. The automotive industry has directed attention of the Administration to the influence of this so-called "stigma" tax as a sales resistance factor at this time when manufacturers are reducing their prices in an effort to stimulate business.

C. C. Hanch, chairman of the tax committee of the National Automobile Chamber of Commerce, conferred with members of the Senate and House fiscal committees and with the officials in the executive departments Monday. Conferences with representatives of other industries showed that the groups which favored a manufacturers' sales tax were not inclined to favor its use for the payment of the bonus and that they object to a bonus in cash.

The Administration will back the bonus but President Harding has reversed his position. Only a week ago he was in favor of meeting it from interest payments on the debts of the allies but he has abandoned this idea. He contends, however, that whatever measure is passed should stipulate the source of the revenue. It is understood he would not object to some form of sales tax for the purpose but a sales tax in any form will be bitterly opposed by the agricultural "bloc". Representative Bacharach of New Jersey has proposed a gasoline tax but this also will be fought to the end by the powerful agricultural interests.

Soldier bonus legislation and revision of the internal revenue laws will not be reached until late in the session and if a bill is passed providing for payment of a bonus out of interest on foreign debts it probably will be vetoed by the President.

If Congress does not insist upon a cash bonus, the indications now are that with a program of economy it will be possible early in 1924 to repeal some of the remaining excise taxes.

DAVIS WILL PRODUCE NEW CAR

RICHMOND, IND., Jan. 9—The Davis Motor Car Co. will bring out a smaller 6-cylinder model some time in March or April. This will be fitted with a new model Continental engine with bore of 3 in. and stroke of 4¼ in. The wheelbase will be 114 in., axles will be Timken and Delco starting, lighting and ignition will be used. The weight will be around 2400 lb. and the price will be in the neighborhood of \$1,250.

FENN TO ADDRESS STUDENTS

NEW YORK, Jan. 11—F. W. Fenn, chairman of the motor truck committee of the National Automobile Chamber of Commerce, will speak before the students in the highway engineering class at the University of Michigan on Jan. 23. His subject will be "Highway Transport Cost and Record Systems." Fenn will lecture at the University of Toronto Feb. 9 and 10 on "Highway Transport and Rural Motor Express Lines."

MOSLER TO BE SOLD

NEW YORK, Jan. 9.—An order has been issued by Federal Judge Hand upon petition of Peter B. Olney, Jr., and Archibald R. Lemieux, co-receivers, directing the creditors of A. R. Mosler & Co., spark plug manufacturers, to show cause why the factory of the company at Mt. Vernon, N. Y., should not be sold to the Noesting Pin Ticket Co., for \$65,000. Hearing on the order will be held Jan. 18.

INDUSTRY AT CONFERENCE

WASHINGTON, Jan. 12—Roy D. Chapin and Windsor T. White have been invited by Secretary of Agriculture Wallace to represent the automotive industry at the agricultural conference which will begin here Jan. 23. Harvey S. Firestone will represent the National Highway Transport Committee.

Erie R. R. Adopts Trucks in System

New Plan of Deliveries More Economical, General Manager Says

NEW YORK, Jan. 9.—Transportation of inbound freight from the cars direct to the consumer by motor trucks has been begun by the Erie as part of the road's new system for bringing the freight from the New Jersey rail terminals into this city without the use of floats.

About 100 trucks supplied by the United States Trucking Corp. are operating under the new plan. Freight arriving at Jersey City in carload lots is loaded in the trucks, the trucks bringing the freight to the Manhattan consignees on the Erie's ferries during the non-rush hours. Other freight is brought to the Independent Warehouses' branches at Laight and Greenwich streets.

J. J. Mantell, general manager of the Erie, said the new plan would be more economical than the old, which meant the transfer of the cars across the river on floats and running the cars upon the piers, whence trucks sent by consignees carted off the freight. The use of much pier space for the trucks was one of the big items of expense.

The new system, Mantell said, would be extended largely in the near future. The intention is to use containers that hold a truck load, which are so constructed that they can be put on the motor truck chassis and, on arrival at destination, be emptied quickly.

VICTOR TO EXCEED 1920.

SPRINGFIELD Ohio, Jan. 10—C. A. Swinehart, salesman of the Victor Rubber Co., following a conference with branch managers and representatives here yesterday, announced that the company expected to repeat its record of last year on tire sales when it increased its sales 60 per cent over 1920. Prospects, he said, are that the salesmen would exceed this increase in 1922.